

This can be most readily done with the file structure chosen. All data may be saved on a disk and used repeatedly, or data may be entered manually for each of the following functions.

With respect to the other utilities, it is doubtful as to their usefulness. The calculator function requires too much time and effort to access as compared to using the real thing. Unless a large number of base conversions are being made, this utility will also be little used. Finally, the random number generator is not documented as to how the numbers are generated or whether or not they are truly random. The random number generator is an "open" file which the user may change to suit whatever application is desired.

Plotting of experimental data includes

Scatter Plots
Trend Plots
Histograms

In the plotting modes the program runs well although it may be considered slow by some. "Scatter plots" are defined by the author to be plots of data points with an additional regression or curve-fitting line also plotted if chosen. "Trend charts" are plots of the data with sequential points connected with a straight line with an optional linear regression line plotted if that option is chosen. Histograms or bar graphs may be generated with the addition of a normal distribution overlay if that option is selected. All plots are well designed (see below) and pleasing to the eye. Each is of a suitable size for entry into a laboratory notebook. Also, each printed plot includes a table of scaling factors, offsets, number of data points on and off scale, and regression or curve fitting data if those options are chosen.

There are some drawbacks to the plots generated. First, the graphs may be labeled and titled but subscripts and superscripts are not available and only one size plot is generated. Second, while the x axis has the label and numbering as expected, the y axis has the label on the left with the numbering on the right side. Third, data points may be represented by only squares or circles (also filled squares and circles on computers with greater than 128K of memory). Last, only 200 data points may be plotted for each graph (1000 for histograms) and only one line per graph is plotted.

Data analysis routines include
Mean and Standard Deviation
Chi-Square Test
Multiple Linear Regression
Polynomial Regression
Exponential, Logarithmic and Linear Curve Fitting
Analysis of Variation

A variety of data analysis routines are provided as listed above. Virtually no mention of the statistical methods used can be found in the manual. This is always a problem with statistics since small variations in methodology can cause considerable differences in the results. Another consideration is whether or not the routines were written to minimize rounding errors which can be significant. Linear, logarithmic, and exponential regression analysis may be plotted with the scatter plots or the results may be tabulated. A single linear regression line, least-squares line, is available with the trend plots. Multiple linear regression with up to five independent variables may be used with scatter plots, or listed as a table. Similarly a polynomial regression up to fifth order may be performed.

Completely separate from routines related to graphical plots are the Chi-square test and the analysis of variation. Chi-squared tests may be run on contingency tables from 2×2 to 4×4 in size. In the analysis of variation routine, groups of data are compared statistically to see if they are the same or not.

All of the above can be considered fairly routine programs which can be generated "in house" with a little effort. It is, however, quite convenient to have all of these in a compact, easy to run, system which can provide consistency within a given laboratory.

The 75-page instruction manual is well above par for this software. With any experience on the MacIntosh these programs are extremely simple to use. Its one drawback is that there is little reference to the calculation methods used. This package is recommended for those who would like to be able to rapidly produce graphical representations of data on a day-to-day basis. It would also be an excellent package for educational use once students have mastered the manual techniques and move on to interpretation of their data.

Neil Jespersen, *St. John's University*

Book Reviews

Enzyme-Mediated Immunoassay. Edited by T. T. Ngo and H. M. Lenhoff (University of California, Irvine). Plenum Press: New York. 1985. vii + 489 pp. \$69.50. ISBN 0-306-42085-6.

During the past 15 years, there has been a proliferation of techniques for enzyme-mediated immunoassays. The literature is rich with a variety of methods for determining a variety of ligands. The review put forth by Ngo and Lenhoff offers a good overview of the theoretical aspects and basic applications of these methods. With over 560 reference citations, this book should serve as a valuable initial reference source for anyone wanting to employ the techniques or to gain general information.

In the opinion of this reviewer, the book has a few shortcomings. These are mainly in style rather than content which made it somewhat annoying, if not difficult, to read. The book is typewritten and reproduced rather than typeset. There are many grammatical and typing errors throughout the text. Some references are incorrectly cited. Several figures are not self-explanatory and require constant referral to the text by the reader for clarification. Very few graphs indicate statistical significance of data or variation in data.

The book has accomplished its intended aim—to present state-of-the-art reviews on enzyme-linked immunosorbent assays. The book would be a useful addition to an institutional library; the value of having it in one's personal library is questionable.

Richard M. Hyslop, *University of Northern Colorado, Greeley*

Biohalogenation: Principles, Basic Roles and Applications. By Saul L. Neidleman and J. Geigert (Cetus Corporation, Emeryville). John Wiley & Sons: New York. 1986. 200 pp. \$49.95. ISBN 0-470-20285-8.

This book is based on the original point of view of the study of the reaction of halogenation by living organisms. It gives to the reader interesting perspectives on many different aspects of biohalogenation: the biosynthesis of halogenated antibiotics, the degradation of pesticides by microorganisms, the role of halometabolites in marine environments, the catalytic mechanism of haloperoxidases, the role of haloperoxidases in

mammalian defense mechanism, and the commercial applications of haloperoxidases. Since these different fields are usually studied by specialists from separate disciplines such as microbiologists, ecologists, pharmacologists, biotechnologists, etc., this book seems to be addressed to wide audiences with the objective to integrate the knowledge of the various disciplines. In this perspective, it is understandable that the treatment seems somewhat superficial. I appreciated particularly how the vast catalogue of halogenated natural substances was reported and analyzed. However, I regret to find so many approximations and a lack of general perspective in the analysis of the data. For example, is it necessary to give in detail various purification protocols of haloperoxidases, without the mention of the homogeneity, the specific activities of the preparations, and the yield of the purification processes? Or is it useful to describe assays of enzymatic activity without any figures on the kinetic parameters V_M and K_M ? There are weaknesses also in the part describing the defense mechanisms in man. Working hypotheses are presented like facts and minor degradative pathways are emphasized only because they pertain to halogenation. For example, the antiinflammatory drugs are presented only as potential substrates for halogenation and the degradation of the chemotactic substances for macrophages is presented as a function of the halogenation process. In spite of all these weaknesses, I recommend this book for specialists in search of new ideas in connected fields who want a provocative perspective together with up-to-date references.

Eveline de Medicis, *University of Sherbrooke*

Spectroscopy of Molecular Excitons. By V. L. Broude, E. I. Rashba, and E. F. Sheka (Academy of Sciences USSR). Springer-Verlag: Berlin. 1985. XI + 271 pp. \$48.00. ISBN 0-387-12409-8.

Spectra of molecular crystals have provided significant information about both molecular and solid-state properties. This monograph describes and documents world-wide research on the latter that occurred over the last 30 years. Both experimental and theoretical results are

presented, and numerous references (375) to the original literature are provided. Most of the references are to work published prior to 1975 (74%), and much recent research utilizing lasers to improve resolution and to investigate dynamics, coherence, exciton-photon interactions, and nonlinear processes is not covered. The book focuses on phenomena that relate to exciton band structures. In particular, the connection between theory and experiment is emphasized and related to the determination of band structures and to the explanation of observations and properties in terms of band structures. The discussion also demonstrates that molecular crystals serve as useful model systems for investigating general problems in solid-state physics, e.g., electron-phonon interactions and the properties of disordered systems. The material is organized in six chapters, providing an introduction and covering exciton spectra of perfect crystals, doped crystals (a low impurity concentration), and mixed crystals (multicomponent systems), band-to-band transitions, and phonon and vibron effects. The description of these topics is excellent. I am sure this book will be regarded as a classic in this field.

David M. Hanson, *State University of New York at Stony Brook*

Treatise on Analytical Chemistry. Second Edition. Part 1. Volume 14. Edited by I. M. Kolthoff (University of Minnesota), P. J. Elving (University of Michigan), and V. Krivan (Universität Ulm). John Wiley & Sons: New York. 1986. xxxii + 795 pp. \$85.00. ISBN 0-471-80648-X.

This volume is, as it claims to be, an excellent comprehensive account of the theory and practice of neutron (and other particulate) activation analysis and radioisotopic methods in use today. The first of its 8 chapters (by K. H. Lieser) deals with fundamentals and provides necessary background information concerning the why and how of radioactive decay, nuclear reactions, activation facilities, and safety in the radiochemical laboratory. The second chapter (by U. Herpers) covers the sorts of instrumentation used in radioactivity detection and measurement. H. J. M. Bowen, in the third chapter, provides a general overview of radiotracer principles while J. Starý, in the fourth chapter, describes techniques used in radiotracer studies. In the fifth chapter, D. Breitig and K. H. Voigt cover all aspects of radioimmunoassay. Radiotracer applications for trace element analysis are covered in the sixth chapter, by V. Krivan. The remainder of this volume covers activation analysis. The seventh chapter (about one-fourth of the book), by G. Erdtmann and H. Petri, covers the principles of activation analysis in its myriad forms. Finally, the eighth chapter (edited by J. Hoste) summarizes specific activation analysis applications to high-purity materials (F. DeCorte and W. Maenhaut), biological materials (R. Cornelis and J. Versieck), environmental samples (R. Dams), geo- and cosmochemistry (J. Hertogen), and art and archaeology (J. Op De Beeck). This last chapter also includes sections on specialized activation analysis with isotope neutron sources (J. Op De Beeck) and charged particles (C. Vandecasteele). It is noteworthy that all authors are European.

The editors have done an excellent job of assuring uniformity of style, and the coverage of each topic seems quite complete. This volume is an excellent addition to the literature and, at the price, a bargain.

Michael E. Lipschutz, *Purdue University*

Interaction of Steroid Hormone Receptors with DNA. Edited by M. Sluysers (The Netherlands Cancer Institute). Ellis Horwood Ltd.: Chichester, England (distributed by John Wiley & Sons: New York). 1985. 242 pp. \$46.50. ISBN 0-89573-366-8.

The title of this book is quite misleading. With the recent advances in analysis of the interaction of steroid receptors with specific genes, one might reasonably expect that this book would focus on receptor binding to specific gene-regulatory regions. However, this is not the case. Only one of the nine chapters in this book is primarily concerned with the interaction of steroid receptors with specific genes and another is concerned with nonspecific binding of steroid receptors to DNA.

The book does include discussion of a number of important areas concerning steroid hormone action. Several of the chapters are concerned with receptor structure and subcellular localization. The chapter by C. R. Clark concerning the intracellular localization of steroid receptors provides a thoughtful and timely review of this area. The chapters concerned with the structure of steroid receptors are useful, although much of the information will require updating based on information obtained from the recent cloning of steroid receptor cDNAs. Other chapters provide useful discussion of the interaction of receptors with chromatin and also nonspecific interaction of steroid receptors with DNA.

The book may be useful to graduate students and others interested in a review of several aspects of steroid receptor structure and function. Most of the chapters are clearly written and adequately referenced.

Richard A. Maurer, *University of Iowa*

Annual Reports on the Progress of Chemistry. Volume 81. Section B—Organic Chemistry. Edited by P. J. Garratt and J. M. Mellor. The Royal Society of Chemistry: London. 1985. xiv + 400. \$116.00. ISBN 0-85186-161-X.

This work is the continuation of the yearly review series produced by the Royal Society of Chemistry, covering the literature of 1984. It touches on nearly all aspects of organic chemistry, i.e., theoretical, mechanistic, photo, biological, and synthetic chemistry, as well as chapters devoted to specific compound groups (aliphatic, alicyclic, heterocyclic, and organometallic). Chapters are also included dealing with physical methods, reactive intermediates, and this year's special topics, carbohydrates, and peptides and proteins. Two chapters missing from this edition are on aromatic compounds (late in arriving from the associate editor) and electrochemistry (no explanation). An author index is also included to complement the generous footnoting. A subject index is not included nor necessary, given the excellent organization of this work. The Table of Contents is very detailed and will guide the interested reader directly to his destination.

This work is recommended for anyone wishing to keep abreast of new developments in the ever-evolving world of organic chemistry. It is of significant value to the professional who desires to maintain a feel for areas of organic chemistry outside of his specialty field, and who cannot seem to find enough time to read and digest the general literature.

James A. Thomas, *Warner-Lambert/Parke-David Co.*