

Computer Software Reviews

Assayzap, Universal Assay Calculator. Elsevier-Biosoft: 68 Hills Road, Cambridge, CB2 1LA, U.K. List Price \$249.00.

Assayzap is designed for the Macintosh to deal with large assays (up to 2000 samples) and to curve fit these data. There are three curve-fitting methods: the two-parameter log-logit, the four-parameter fit; and a weighted four-parameter fit to minimize the effect of outlying points. The program will fit the data interactively as opposed to the standard mathematical approach. A first approximation to a standard curve is calculated by using one of the above methods, presented on the screen (as a continuous curve) and stored as a set of 42 straight line sections. A set of tools is provided that allows the user to move the curve around, smooth, or compare to previous curves. Assayzap recognizes four general curve types: standard curve where response decreases with increasing analyte, standard curve where response increases with analyte, curves

with an extended dynamic range and positive slope, and linear curves with positive slope. Accuracy is claimed to be good (~0.5%) and reproducibility very good.

The program conforms to MacIntosh guidelines, and the disk contains a "system folder", and makes extensive use of the mouse. It is non-copy protected and is Microsoft Excell compatible. It is not the easiest software program to learn but it is user friendly. It makes good use of statistics, and the ability to move the curve around is a good feature. Although primarily designed for large amounts of data it can be used with smaller amounts of data. Obviously, its main use will be for large assays, but it may be used by the chemist who prefers this approach to fitting his data as opposed to a mathematical approach.

Joseph Sneddon, *University of Lowell*

Book Reviews *

SCI-TECH: Scientific and Technical Books and Serials in Print. 1988. Three Volumes. 15th Edition. R. R. Bowker Co.: London and New York. 1988. xxvi + 4490 pp. \$159.95. ISBN 0-8352-2362-9; 0-8352-2364-7; 0-8352-2365-5.

These three hard-bound volumes are indexes: Volume 1, Subjects; Volume 2, Authors; Volume 3, Titles, Vendors, Publishers, etc. They constitute an enormous work that spans a broad range of fundamental and applied science and includes books in the major languages of the areas. It can be very useful for determining sources of information, and even for fleshing out one's fragmentary recollection of a book. If only the subject (not necessarily the title) is known, or only the author, it is possible to identify a book with little effort and to find out who publishes it and how much it costs. The subtitle of the work, "An Index to Literature in Science and Technology", is apt, if one allows for the fact that it does not purport to index individual articles. Whereas the individual chemist is not likely to want a personal copy, libraries serving chemists should certainly have it immediately available. It provides a simple key to the major publications in a given field, and it can be of immense help to anyone contemplating work in a new field.

Organic Photochemistry. Volume 8. Edited by Albert Padwa (Emory University). Marcel Dekker, Inc.: New York and Basel. 1987. xi + 373 pp. \$99.95. ISBN 0-8247-7702-6.

Volume 8 of this series consists of four chapters dealing specifically with the following: "Photochemical Transformations on the Primitive Earth and Other Planets", by James P. Ferris; "Photochemistry with Short UV Light", by Mark G. Steinmetz; "Matrix Isolation Photochemistry", by Robert S. Sheridan; and "The Influence of the Molecular Crystalline Environment on Organic Photorearrangements", by John R. Scheffer, Miguel Garcia-Garibay, and Omkaram Nalamasu.

The first chapter by Ferris discusses models for studying photochemical transformations occurring on primitive and, especially, prebiotic earth. The most reliable method consists of studying photochemical processes occurring in atmospheres of other planets and moons within our solar system where different levels of reducing atmospheres can be found. He outlines the photochemistry resulting from sunlight, emitting primarily in the short UV, fueling various reactions leading ultimately to the formation of small hydrocarbons.

The second chapter by Steinmetz deals primarily with solution photochemistry with short-wavelength UV irradiation, namely in the 185-nm region. He begins with a discussion of the light sources available and their emission characteristics. Product distributions from the rearrangement of acyclic alkenes upon irradiation are discussed as a function of irradiating wavelength and solvent. Similar discussions are made for cyclic alkenes, dihydropyrans, and cyclic alkanes. This section also contains a review on the more complex bichromophoric systems.

The third chapter by Sheridan focuses on IR spectroscopic analysis of intermediates trapped in an inert matrix. A good general description

of the matrix isolation technique is given, elaborating its strengths as well as its weaknesses. A plethora of reactions are presented in which IR analysis of matrix isolated intermediates provided key evidence in elucidating their mechanisms. Examples include the photolytic generation of antiaromatics, especially cyclobutadiene, as well as photolysis of aryl azides yielding nitrenes as determined through the characterization of unstable products within an argon matrix. Characterization of benzynes, silenes, silylenes, and free radicals is also described. Besides simple trapping and analysis of products, the technique also allows for monitoring further rearrangements of the trapped products induced by subsequent heating or irradiation. Monitoring can be done by IR as well as UV-vis.

The final chapter by Scheffer, Garcia-Garibay, and Nalamasu presents a good review on photochemistry within the solid state. Many reactions in the gas phase have been studied to explore chemical reactivity in the absence of solvent effects. Solid-state photochemistry compliments such studies. The crystalline environment tends to limit photoreactions to only those that are topochemically allowed. These restrictions are clearly outlined in a summary of optimal parameters for intramolecular reactions such as H abstraction. Numerous photoreactions within the solid state are described, including ene-dione, Norrish Type II, and photoextrusion reactions. From a more practical side an interesting section on solid-state photochromism is also presented.

This volume presents a broad scope of topics of continuing interest within the science of photochemistry.

Peter Gottschalk, *Mead Imaging*

Molecular Foundations of Drug-Receptor Interaction. By P. M. Dean (Department of Pharmacology, University of Cambridge). Cambridge University Press: Cambridge and New York. 1987. xv + 381 pp. \$75.00. ISBN 0-521-30255-2.

This is an excellent book that provides a detailed examination of a very complex and diverse subject on the interactions of a variety of ligands with biological receptor sites. In this book, the author provides the historical perspectives of this subject and its origins and early theories and details its evolution through today's computer technology and molecular modeling analyses. The author provides a generous and much welcomed intermingling of the biological and biochemical properties of these drug-receptor interactions with the in depth analysis of the physical chemical properties that dictate the thermodynamics, kinetics, and spatial geometry of the interactions. An analysis of this type provides readers who are not experts in this particular field to gain insight into the complexities surrounding the interactions of ligands with various receptor sites.

Over the course of the book, there is particular emphasis placed on the computational aspects of ligand-receptor interactions. The discussions concerning computer modeling, design, and data bases are extremely useful and provide an excellent foundation for further study and analysis. Included are in depth analyses of MO analysis, electron densities and distance geometries associated with ligand-receptor interac-

*Unsigned book reviews are by the Book Review Editor.