Computer Software Reviews

PLT. Version 5.0. Rylaz Products, 514 Edward Street, Madison, Wisconsin 53711. List price $80.00 ($75.00 if payment accompanies order).

PLT is a complete program that allows one to draw high-quality chemical structures with IBM PC/XT/AT/PS2 or clones. It supports VGA, EGA, CGA, or Hercules graphics. Files for a variety of printers are included, Epson 9-pin and 24-pin (default), HP Laserjet, postscript printers, and HP 7470A and 7475A plotters. At least 512K of memory are required, and although a hard disk is not mandatory it is highly recommended. A mouse can be used although keyboard commands are simple and present no problem.

PLT is a what-you-see-is-what-you-get structure-writing program. It can plot to disk for later recall and can print in one of three proportionally spaced graphics fonts. Greek letters, degree, triple and double bonds, arrows, etc. are available. Circles, arcs, curves, and sine and cosine waves are easily drawn. Lines can be drawn as solid or dotted, dashed, hatched, wiggly, wedged, bold, double, or triple. Template structures can be loaded directly from the program, although the number of these is somewhat limited. New template structures provided by the user are, however, easily added. Perhaps the most appealing feature of the program is the ability to move a portion or all of a drawing, change its size, and rotate, erase part, reverse, or transfer it to another drawing. Frequently used text fragments can be saved and retrieved with a single command.

A manual is provided which is comprehensive and explains each individual command. For a first-time user a tutorial section is included which allows one to become familiar with the program and to begin drawing structures with little additional study. There are a few typographical errors, and some commands could be more fully explained, i.e. the use of subscripts. Drawings produced on a dot-matrix printer, an Epson LX, are of high quality such that work is not required to make them journal acceptable.

PLT is a high-quality program available at a relatively low price. Plotting and printing chemical structures including stereochemical structures is relatively simple. The program should be seriously considered.

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Book Reviews*

Electroanalysis of Biologically Important Compounds. By J. P. Hart (Bristol Polytechnic, U.K.). Ellis Norwood: New York. 1990. 213 pp. $79.95. ISBN 0-13-252107-5.

The stated objective of this book is to demonstrate that modern electroanalytical techniques can be used to overcome many of the problems encountered in the analysis of biological compounds with emphasis on the measurement of these substances in foods, pharmaceuticals and biological matrices. The book comprises five chapters. Chapter 1 (26 pages) describes some of the more important polarographic/voltammetric electroanalytical techniques and the principles of amperometric and coulometric detectors employed in conjunction with high-performance liquid chromatography and flow injection analysis. Each technique is discussed very briefly, and it is unlikely that anyone not already familiar with electroanalytical chemistry could gain much understanding from the material presented in this chapter. The discussions of AC polarography, various pulse polarographic/voltammetric techniques, and linear-sweep and cyclic voltammetry are particularly weak. The excitation waveform for AC polarography shown on page 17 is carelessly and confusingly drawn, and the cyclic voltammogram shown on page 22 is an extraordinarily miserable example. The explanation of a three-electrode operational amplifier potentiostat is inadequate and, indeed, misleading. Chapter 2 (44 pages) discusses, first, mechanistic aspects of the electrochemistry of pyrimidine and purine derivatives, including nucleic acids, and then describes electroanalytical methods which can be employed to measure these compounds. The remaining chapters deal similarly with amino acids, peptides and proteins (Chapter 3, 51 pages), vitamins (Chapter 4, 54 pages), and selected coenzymes (Chapter 5, 17 pages). Each chapter presents a reasonably thorough review of direct electroanalytical methods which have been used to determine appropriate biological molecules. However, the author does not adequately emphasize the fact that electroanalytical methods are really of little value for direct analyses of biomolecules in real biological matrices because of their lack of selectivity and their susceptibility to many other interferences. The sections on LCEC in Chapters 2–5, therefore, were of considerably more value. However, it was surprising that the recent advances in neurochemical analyses of the biogenic amines and other neurotransmitters and their metabolites using LCEC were not discussed more thoroughly.

Overall, this is a rather disappointing book. The title is much too broad. There are far superior texts and review chapters available which can provide a better introduction to both the principles and applications of electroanalytical methods. In addition, mechanistic aspects of the electrochemistry of biological molecules have been dealt with more authoritatively and comprehensively elsewhere. However, some readers may find that the book provides a good guide to the literature relating to some compounds of interest.

Glenn Dryhurst, *University of Oklahoma*

Biological Monitoring of Exposure to Chemicals—Organic Compounds. Edited by Mat H. Ho and H. Kenneth Dillon (University of Alabama). John Wiley & Sons: New York, Chichester, Toronto, and Singapore. 1987. ix + 352 pp. $65.00. ISBN 0471-82275-2.

The chapters of this book are essentially derived from papers presented at the Symposium on the Biological Monitoring of Exposure to Organic Compounds which was held in conjunction with the 187th National Meeting of ACS in St. Louis, Missouri, 1984. In view of this aspect the content of the book could be expected to be fragmentary; however, to the credit of the Editors, the sequence of the chapters is in a logical order as to minimize this drawback.

The first six chapters of the book cover the general aspects of biological monitoring. Although some of the topics discussed in this portion of the book are traditional, that is they are well-known in the field of toxicology, the style and the organization by which they are presented make this section valuable for didactic use. In addition, in this section there are some innovative topics; many of them are presented in Chapter 3 by V. Fiserova-Bergerova who presented the use of multicompartmental simulation models for the identification and correction of several factors which may distort the outcome of biological monitoring of inhalation exposures. The problems of inappropriate extrapolation of biological threshold values from laboratory data are also dealt with extensively in this chapter.

Factors which affect the levels of organic volatile compounds in alveolor air and blood are discussed in Chapter 4 by Brugnone et al. along with the presentation of the data obtained from the study of 17 different organic solvents. The shortcomings of biological monitoring of solvents are presented in Chapter 5 by van Hemmen and de Mik. The role of clinical pathology methods in biological monitoring is discussed by Meeks in Chapter 6.

Most of the following chapters are reports on specific applications of biological monitoring of exposure to certain organic compounds such as benzene, toluene, xylene, styrene, methylethyl ketone, hexane, methanol, 1,1,1-trichloroethane, tetrachloroethylene, organophosphorus pesticides, chlorinated pesticides, *N,N*-dimethylformamide, polychlorinated biphenyls, hexachlorobenzene, 2,3,7,8-tetrachlorodibenzo-*p*-dioxin, and 1,2-dimethylhydrazine.

The various biological exposure indices discussed in the last three chapters include direct measurements of parent compounds in alveolar air or in blood, their metabolites in blood and urine, indicators of mi-

*Unsigned book reviews are by the Book Review Editor.