load and save structures to any given filename. Wildcard operations are allowed in describing files when using OTHERS. Another useful function associated with files is the ability to document structures and queries using the TEXT menu. Since all structures are stored as ROSDAL[3] strings, files are in ASCII format and may be read and edited outside Autonom. Other Beilstein PC products such as MOLKICK or products from other software vendors that read ROSDAL can also interact with structures in these files. Conversely, Autonom can read ROSDAL structure files generated by other programs.

An interesting and very useful feature is the session history file kept by the program. This file contains a list of names of structures generated during the current session. Furthermore, the structures can be recalled to the structure editor for further manipulation. This history file can be saved to disk for recall and use in a later session.

Hard copy is obtained through the PRINT menu. The user may print either the query on the screen or structures in a file, a very useful option. We have an HP Deskjet 500 attached to the PC running the program, and we found that while print quality was very good, print speed was disappointingly slow (e.g. anthracene took almost 5 min to print). This may be because the printer driver supplied with the program is for an HP Deskjet rather than the Deskjet 500, since other software on our system prints graphics quite rapidly. We were unable to test the Postscript printer driver because the program does not currently allow one to print to a file rather than to an output device (i.e., LPT# or COM#). Because Autonom does not utilize Windows, printing ties up the PC for the duration of the printing process. One could avoid this problem by running Autonom using the MS-DOS prompt window rather than in full screen mode, but then the inherent slowness of graphics in a Windows 3.1 DOS prompt window makes the program unusable.

One of the best features of Autonom is the user's manual. This is one of the finest, most complete, and yet easiest to read documents I have gotten with software. In addition to a description of the software and operations, the manual includes a tutorial that runs the user through all of the basic program operations and a chapter called "Boundary Conditions of Version 1.0" which is devoted to describing the limitations of the program and extensive discussion of the IUPAC rules implemented in version 1.0. I found that using the program in conjunction with this explanation of the rules significantly increased my understanding of the various IUPAC rules for nomenclature. Thus, Autonom could serve as a very useful teaching tool in undergraduate organic chemistry (or as a refresher for those too long separated from nomenclature) in addition to its uses in research, such as data basing and cataloging and when reading and writing chemical literature, manuscripts, and patents. Also included in the manual is an appendix listing the twenty-five error and eight warning codes that may be generated by the program in response to a query as well as the causes and potential solutions to the errors. This feature makes the program much less black box, while extending the range of compounds that may be named. For example, one might get an error message and no name when a single ring system includes both fused and spiro elements. The manual suggests using the isolated fused and spiro systems as models and then working out the rest of the name manually. Finally, the help available by calling Springer-Verlag was excellent.

This is a unique and very good program that promises to get better. It should be useful to anyone who reads and writes for the chemical literature and should find significant use in many areas of research and teaching.

(1) Goebels, L.; Lawson, A. J.; Wisniewski, J. L. *J. Chem. Inf. Comput. Sci.* **1991**, *31*, 216. Wisniewski, J. L. *J. Chem. Inf. Comput. Sci.* **1990**, *30*, 324.

(2) *Nomenclature of Organic Chemistry, Sections A–H*; Pergamon: Oxford, 1979.

(3) ROSDAL: Representation of Structure Description Arranged Linearly.

(4) This means that the program was run as a non-Windows application from within the Windows operating system. Thus the program was set up using the FILE PROPERTIES menu in the Program Manager.

Douglas A. Smith, *The University of Toledo*

*Book Reviews**

Drying '92: Parts A and B. Edited by A. S. Mujumdar (McGill University). Elsevier: Amsterdam and New York. 1992. xxviii + 1954 pp. $437.00. ISBN 0-444-89393-8.

These two volumes contain the Proceedings of the 8th International Drying Symposium held in Montreal, August 2–5, 1992. The 197 papers, in typescript form, are organized under the following 15 sections: Part A: I. Plenary/Keynotes/Invited Lectures; II. Fundamental Studies in Drying; III. Modelling and Simulation; IV. Spray Drying; V. Dielectric Drying; VI. Infrared Drying; VII. Drying of Particulate Materials; VIII. Drying of Foods; Part B: IX. Drying of Paper; X. Drying of Wood; XI. Drying of Advanced Materials; XII. Industrial Drying; XIII. Drying of Agricultural Products; XIV. Novel Dryers; and XV. Miscellaneous Topics. There is an index of the contributors, but no subject index.

Structure & Function. Volume 1: Nucleic Acids. Volume 2: Proteins. Edited by R. H. Sarma and M. H. Sarma (State University of New York at Albany and National Foundation for Cancer Research). Adenine Press: Schenectady, New York. 1992. Volume 1: x + 276 pp. $95.00. ISBN 0-940030-37-3. Volume 2: x + 192 pp. $95.00. ISBN 0-940030-38-1. Two-volume set: $190.00. ISBN 0-940030-36-5.

These books contain the Proceedings of the Seventh Conversation in Biomolecular Stereodynamics held at the State University of New York at Albany, June 18–22, 1991, under the auspices of the Department of Chemistry and organized by the University's Institute of Biomolecular Stereodynamics. There are, in typescript form, 19 chapters in Volume 1 and 16 chapters in Volume 2. There are no indexes.

Biomembrane Structure & Function: The State of the Art. Edited by Bruce P. Gaber (Office of Naval Research, USA) and K. R. K. Easwaran (Indian Institute of Science). Adenine Press: Schenectady, New York. 1992. x + 386 pp. $95.00. ISBN 0-940030-35-7.

This book contains the Proceedings of the U.S.–India Workshop on Biomembrane Structure and Function under the auspices of the Office of Naval Research, USA, and the Dept. of Science and Technology, India, held in Bangalore, India, January 6–15, 1991. It consists of 27 papers organized under the following headings: Membrane Self-Assembly; Membrane Proteins; Membrane Lipids; Membrane Transport; Phospholipases; and Computers in Membrane Research. There are no indexes.

Elastomeric Polymer Networks. Edited by James E. Mark (University of Cincinnati) and Burak Erman (Bogazici University, Istanbul, Turkey). Prentice Hall: New Jersey. 1992. xiv + 354 pp. $72.00. ISBN 0-13-249483-3.

The *Polymer Science and Engineering Series* was introduced by Prentice Hall to make available a series of books covering current developments in the areas of polymer chemistry, physics, and engineering as well as applications of polymeric materials. In this volume of the series, the editors have assembled a collection of 23 papers as a memorial to Dr. Eugene Guth who died July 5, 1990 just prior to a planned 85th birthday celebration. Included in this volume are the recollections by Professor Herman Mark of his early collaborations with Dr. Guth.

The theory of rubber elasticity is one of the oldest in polymer science, although initially the interpretation of the behavior of rubber-like materials was qualitative. Theories became more quantitative with the development of the affine model of deformation and, later, the non-affine (or phantom network) model of chain deformation. The phantom network theories that were developed by Dr. Guth appeared to better explain the experimental results of rubber elasticity than did the affine theories. However, as the breadth of experimental and theoretical papers in this volume demonstrates, this is a very active field and further research is needed to develop a more encompassing theory that would help explain data such as those obtained by neutron scattering. Indeed, the affine and phantom network models may represent the limits between which most elastomers behave. The presentations in this volume are excellent in technical content as well as in giving the reader an insight into how these researchers modified and extended the concepts proposed by Dr. Guth. Thus, a newcomer to the field will be able to get an understanding of the current state-of-the-art of rubber elasticity as well as a perspective on the history of the development of these various concepts.

This book will be a useful addition to the researcher's library as well as for students majoring in polymer science and engineering.

Donald J. Lyman, *University of Utah*

*Unsigned book reviews are by the Book Review Editor.

Biocatalysis at Extreme Temperatures: Enzyme Systems Near and Above 100 °C. ACS Symposium Series No. 498. Edited by Michael W. W. Adams (University of Georgia) and Robert M. Kelly (North Carolina State University). American Chemical Society: Washington, DC. 1992. x + 216 pp. $54.00. ISBN 0-8412-2458-7.

This book was developed from a symposium sponsored by the Division of Biochemical Technology at the 201st National Meeting of the ACS at Atlanta, GA, April 14–19, 1991. After a preface by the editors, it contains 13 chapters, in typescript form, as well as indexes of authors, affiliations, and subjects.

Computational Chemical Graph Theory: Characterization, enumeration and generation of chemical structures by computer methods. By N. Trinajstić, S. Nikolić, J. V. Knop, W. R. Müller, and K. Szymanski. Ellis Horwood: New York. 1991. 278 pp. $73.95. ISBN 0-13-151739-2.

Although the title of this book implies that it covers the application of graph theory to general chemical structures, it in fact deals almost exclusively with polycyclic, benzenoid hydrocarbons and cogeners. This is not too surprising when one recalls the interests of the authors.

The ten chapters may be divided into three topics. The first two chapters comprise the first topic which covers the basic definitions in graph theory and various molecular codes. Special attention is given to codes (boundary, DAST, and Wiswesser) for describing polyhexes. It is unfortunate that the recently developed SMILES code for general organic structures is not mentioned.

The second topic covers the enumeration of chemical graphs, again with special emphasis on polyhex systems. Included with the discussion are listings of the computer programs (based on molecular codes) used to do the enumeration and tables of the results. They should be useful to others interested in this particular area of research. There are four chapters dealing with the application of these algorithms to chemically and biologically interesting problems: carcinogenic bay regions, aza-polyhexes, Kekulé valence structures, and chemical stability of isomeric structures.

The last two chapters of the book are devoted to graph-theoretical indices and ID numbers and constitute the last topic. The classical indices of Randic, Wiener, and Balaban are covered, but only as applied to hydrocarbons. None of the extensions to species containing hetero-atoms or multiple bonds are treated.

The book is rich with tables and figures, and the inclusion of computer program listings is a real advantage. Mathematical expressions and equations are used freely but are not burdensome. Each chapter ends with a generous list of references to the original literature. There are, however, many typographical errors, but they are not too serious and should not pose problems for the reader.

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Analysis of Antibiotic/Drug Residues in Food Products of Animal Origin. Edited by Vipin K. Agarwal (The Connecticut Agricultural Experiment Station). Plenum Press: New York. 1992. vii + 264 pp. $79.50. ISBN 0-306-44199-1.

This book was developed from an American Chemical Society symposium sponsored by the Division of Agricultural and Food Chemistry at a meeting held in New York, NY, August 25–30, 1991. It consists of 18 chapters, in typescript form, a list of the contributors with their affiliations, and a subject index.

Frontiers of High-Pressure Research. NATO ASI Series; Series B: Physics Volume 286. Edited by Hans D. Hochheimer and Richard D. Etters (Colorado State University). Plenum Press: New York. xii + 498 pp. $125.00. ISBN 0-306-44188-8.

This book contains the Proceedings of a NATO Advanced Research Workshop on Frontiers of High-Pressure Research held in Fort Collins, CO, July 15–18, 1991. It is dedicated to Ian L. Spain of Colorado State University, who died before this meeting, which he helped to plan. There are 41 chapters, in typescript form, organized into the following sections: Polymers and Low Dimensional Systems; Molecular Crystals, Liquids and Pressure Induced Phase Transitions; Quantum Wells and Semiconductors; and High Temperature Superconductors. There is a list of the contributors and a subject index.

Ultrastructure Processing of Advanced Materials. Edited by Donald R. Uhlmann and Donald R. Ulrich. John Wiley & Sons Inc.: New York. 1992. xviii + 724 pp. $89.95. ISBN 0-471-52986-9.

This book contains the Proceedings of the Fourth International Conference on Processing of Ceramics, Glasses, and Composites held February 20–24, 1989 in Tucson, AZ. It is dedicated to the memory of Donald R. Ulrich, one of the editors, who died while the book was in press. After the dedication, it contains a list of the contributors with their affiliations, a preface by both editors, and 62 chapters organized under the following sections: Part 1, Precursors, Chemistry and Structure Development in Ultrastructure Processing; Part 2, Processing; Part 3, Powders, Films, and Monoliths; Part 4, Composites Including Organic-Modified Ceramics; Part 5, Optical and Electrical Applications; and Part 6, Organometallic Precursors, Polymers and Aerogels. There is a subject index.

Regulation of Isopentenoid Metabolism: ACS Symposium Series No. 497. Edited by W. David Nes (U.S. Department of Agriculture), Edward J. Parish (Auburn University), and James M. Trzaskos (Du Pont Merck Pharmaceutical Co.). American Chemical Society: Washington, DC. 1992. x + 270 pp. $66.95. ISBN 0-8412-2457-9.

This book was developed from a symposium sponsored by the Division of Agricultural and Food Chemistry at the 201st National Meeting of the ACS in Atlanta, GA, April 14–19, 1991. After a preface by the editors, it contains 19 chapters, in typescript form, organized under the following sections: Regulation of Presqualene Steps, Regulation of Postsqualene Steps, and Cholesteral Homeostasis and Molecular Biology. There are indexes of authors, affiliations, and subjects.

Electron Spin Resonance. Specialist Periodical Reports. Volume 13A. Editor/Senior Reporter: M. C. R. Symons (University of Leicester). Royal Society of Chemistry: Cambridge. 1992. xiv + 266 pp. £62.50. ISBN 0-85186-901-7.

This volume is published in Parts A and B in alternate years. Volume A deals with organic and bioorganic topics from both practical and theoretical points of view. Several of the chapters in this volume are on-going from Volume 12A including reports by Brian Tabner on "Organic Radicals in Solution", by Andrew Hudson on "Theoretical and Physical Aspects of ESR", and by James O'Donnell et al. on "Applications of ESR Spectroscopy in Polymer Chemistry". A continuation of the review on "Free Radical Studies in Biology and Medicine" contained in Volume 12A was unfortunately unavailable for Volume 13A. However, a discussion of organic radicals in the solid state, which was missing from Volumes 11A and 12A, is well covered in chapters by Chris Rhodes on "Organic Radicals in Solid Matrices" and by David Close in "Organic Radicals in Solids". Both chapters contain discussions of radicals of biological relevance. New topics introduced in Volume 13A include excellent discussions of "Fluorescence Detected Magnetic Resonance" by David Werst and Alex Trifunac and "Industrial Applications of ESR Spectroscopy" by Shirley Fairhurst which summarizes work on the use of stable radicals to assess the photostability of polymer films and ESR active components of fossil fuels.

According to the preface, this will be the last volume in the series to be edited by M. C. R. Symons. Professor Symons has demonstrated a comprehensive interest and high standards of editorship in this and previous volumes. He deserves the richest of accolades for this contribution. I presume that primarily because of his leadership the term ESR has been retained in the title and text as well as by many workers in the field. Volume 13A of this series is a valuable reference for all workers in the area of EPR. The recent pertinent literature is reviewed to mid-1991 and Volume 13A contains an author index to all citations given in the various chapters.

Glen A. Russell, *Iowa State University*