

Environmental Organic Chemistry

Rene P. Schwarzenbach, Philip M. Gschwend, and Dieter M. Imboden. Wiley: New York, NY, 1993. x + 681 pp. Figs. and tables. 19.8 × 24.3 cm.

This textbook will enable the serious reader to understand and, possibly, to develop models for predicting the fate of organic compounds released into the environment. Synthetic compounds released as a consequence of human activity are the concern here. All readers, including advanced undergraduates, can find here many examples in which basic concepts of organic and physical chemistry are applied to understanding molecular transport and rates of chemical and biological transformation. Effects of chemicals on organisms and ecosystems are not discussed, but all of the examples pertain to environmentally harmful compounds. The focus is on using molecular structure to predict physical and chemical properties quantitatively. This approach is used consistently and effectively throughout the book.

Although the book is intended as an introductory textbook for students in environmental science, its organization makes it useful for undergraduates (as background for research papers or special topics courses) and for graduate students because of the numerous literature citations within the text. Each major topic is introduced with a review that will be helpful to students who have been away from the study of chemistry for several years. The review of basic organic chemistry and thermodynamics is not likely to be adequate, though, for readers who have not had courses in organic and physical chemistry. Subsequent chapters deal with equilibrium partitioning of compounds between gas, liquid, and solid phases. The usefulness of linear free-energy relationships is demonstrated with many examples. The mathematical description of mass transfer is developed clearly and provides a good foundation for the treatment of the time scale of diffusion in natural systems as well as chemical kinetics.

Particularly valuable are the two chapters on photochemical and microbial transformations. The discussion of photochemistry begins at the most basic level and proceeds with mechanisms of direct and indirect (sensitized) photolysis. Basic topics in enzymology provide an introduction to strategies of microorganisms to initiate metabolism of xenobiotic compounds. Extensive use is made of Michaelis-Menten type enzyme kinetics. These two chapters also should serve as helpful supplements for a biochemistry or advanced organic chemistry course.

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Monographs

Supported Reagents: Preparation, Analysis, and Applications

James H. Clark, Adrian P. Kybett, and Duncan J. Macquarrie. VCH: New York, NY, 1992. ix + 152 pp. Figs. and tables. 16.2 × 24.3 cm.

This book contains useful references detailing the best techniques to apply to particular problems. The authors discuss the

many choices available in the preparation of supported reagents, including loading support, method of preparation and activation, as well as covering the various analytical techniques to apply to solids. They also use numerous examples of supported reagents and their use in organic synthesis, emphasizing practical aspects.

Macrocyclic Chemistry: Aspects of Organic and Inorganic Supramolecular Chemistry

Bernard Dietrich, Paulette Viout, and Jean-Marie Lehn. VCH: New York, NY, 1992. xv + 384 pp. Figs. and tables. 17.7 × 24.7 \$99.

Based on the lecture notes of Nobel Laureate, Jean-Marie Lehn, this translation of the 1991 French edition offers revised and updated interdisciplinary information on molecular recognition and supramolecular chemistry. Coverage explores a wide variety of structures and properties of macrocyclic and macropolycyclic compounds: from the ligand to the complex; from the receptor to the supermolecule; involving increasing complexity of structural type; and from synthetic routes through the binding of different substrates. The authors illustrate how macrocyclic and supramolecular chemistry can be a valuable asset to such areas as inorganic, analytical, coordination, and physical chemistry, as well as biochemistry.

Malignant Transformation by DNA Viruses: Molecular Mechanisms

Walter Doerfler and Petra Böhm, Editors. VCH: New York, NY, 1992. xi + 236 pp. Figs. and tables. 17.8 × 24.7 cm.

Molecular Biology of the Cell

Walter Doerfler, Editor. VCH: New York, NY, 1992. xiv + 310 pp. Figs. and tables. 17.7 × 24.6 cm.

Thin-Layer Chromatographic R_f Values of Toxicologically Relevant Substances on Standardized Systems, Second, Revised and Enlarged Edition

Deutsche Forschungsgemeinschaft Commission for Clinical-Toxicological Analysis. VCH: New York, NY, 1992. v + 308 pp. Figs. and tables. 17.7 × 24.5 cm.

The Organic Chemistry of β -Lactams

Gunda I. Georg, Editor. VCH: New York, NY, 1993. xi + 381 pp. Figs. and tables. 16.4 × 24.2 cm.

This book offers a review of the major advances in β -lactam chemistry over the past decade. Focusing on the organic chemistry of the β -lactam regardless of their biological activity, coverage concentrates on the methodology required to synthesize β -lactams and β -lactam antibiotics within a broad scope of β -lactam chemistry. Written by chemists from industry and academia, each chapter features a brief overview of the chemistry and includes references to the literature for further research. While most chapters emphasize stereocontrol, other chapters explore such areas as novel methods for the construction of the β -lactam ring system, the formation of bicyclic β -lactam, the chemistry of the side-chains of β -lactam antibiotics, functional group conversion, and the protection of group chemistry.

Reviewed in This Issue

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Reviewer

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