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Arrow Pushing in Organic Chemistry: An Easy Approach to Understanding Reaction Mechanisms (Book Review)

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Williams (Florida Museum of Natural History), Bogan (North Carolina State Museum of Natural Sciences), and Garner (Alabama Department of Conservation and Natural Resources) have made a great effort to clarify the confusing taxonomic history by including all synonyms and even the figures from previous descriptions. Opening chapters cover numerous topics including the history of mussel studies in the region, important geological features, conservation efforts, and a very thorough discussion of their biology and ecology. The authors clearly explain and diagram terms used for shell features and internal morphology and provide a comprehensive glossary. A major contribution to freshwater biology and an essential reference. **Summing Up:** Essential. ★★★★ Academic through professional collections, all levels.—*G. C. Jensen, University of Washington*

Chemistry

46-3252 QP601 MARC

Bisswanger, Hans. **Enzyme kinetics: principles and methods.** 2nd rev. and updated ed. Wiley-VCH, 2008. 301p bibl index afp ISBN 9783527319572, $200.00

Enzyme kinetics is not a new area in biochemistry. Thirty years ago, enzyme kinetics was one of the most important tools for deconstructing enzymatic mechanisms. With advances in enzyme structure determination and molecular genetics, enzyme kinetics is no longer as prominent. However, enzyme kinetics is still useful to gain insight into enzymes that are too large for NMR studies and that cannot be crystallized. Many enzymes that fit into this category are membrane bound, the kinetics of which are much more complicated. In this new edition (1st ed., 2002), Bisswanger (Univ. of Tübingen, Germany) does a nice job of extending solution enzyme kinetics to membrane-bound enzymes. Setting it apart from other works on the subject, *Enzyme Kinetics* does not simply deal with substrate binding as a part of the reaction kinetics, but instead devotes about one-third of the text to equilibrium binding between macromolecules and ligands in which no reaction catalysis follows the binding. This binding is then directly connected with enzyme catalyzed reaction kinetics. *Enzyme Kinetics* was written to serve as a graduate-level course resource and would serve this population well. The inclusion of student problems would be an improvement. **Summing Up:** Recommended. ★★ Graduate students, researchers, and faculty.—*L. J. Liotta, Stonehill College*

46-3253 TD193 MARC

Environmental forensics, ed. by R. E. Hester and R. M. Harrison. Royal Society of Chemistry, 2008. 175p bibl index (Issues in environmental science and technology, 26) ISBN 9780854049578, $99.00

Environmental forensics is an area that is unknown to most scientists. It is a combination of analytical and environmental chemistry used to investigate what is in the environment and where it came from. The data generated can then be used to prosecute those who have violated laws that protect the environment. In this volume of *Issues in Environmental Science and Technology*, articles cover the major topics and techniques in the field of environmental forensics. Written by some of the leading experts in the field, chapters cover various topics including source identification, microbial techniques, stable isotope analyses, petroleum fingerprinting techniques, tracking chlorinated solvents, and using environmental forensics to track groundwater pollution. This book opened this reviewer's eyes to what the field of environmental forensics is and what it can do for society. The volume will be useful for specialists in this area who may be interested in what experts say about these topics. **Summing Up:** Recommended. ★★ Upper-division undergraduate through professional collections; general readers.—*S. S. Mason, Mount Union College*

46-3254 QP517 2008-273254 MARC

Henriksen, Niels Engholm. **Theories of molecular reaction dynamics: the microscopic foundation of chemical kinetics,** by Niels Engholm Henriksen and Flemming Yssing Hansen. Oxford, 2008. 378p index afp ISBN 0199203865, $90.00; ISBN 9780199203864, $90.00

This work presents the underlying theories of the reaction rate constant, k, in unimolecular and bimolecular reactions. Henriksen and Hansen (both, Technical Univ. of Denmark) begin with ideas familiar to undergraduates who have studied physical chemistry, such as the Schrödinger equation and the Boltzmann distribution, as they methodically explain multiple approaches to understanding the gas-phase rate constant on a molecular level. A second section of the book introduces ideas of condensed-phase reaction rate theory. The nine appendixes offer further reading on topics such as statistical mechanics, quantum mechanics, and coordinate transformations. *Theories of Molecular Reaction Dynamics* would be an excellent resource for a graduate-level course on molecular dynamics or a reference for a practitioner who wants a starting point for understanding some of the fundamental theories guiding scientific understanding of chemical reactions. **Summing Up:** Recommended. ★★ Upper-division undergraduate through professional collections.—*J. A. Bartz, Kalamazoo College*

46-3255 QD262 MARC

Levy, Daniel E. **Arrow pushing in organic chemistry: an easy approach to understanding reaction mechanisms.** Wiley, 2008. 300p index ISBN 9780470171103, $40.00

The first two semesters of organic chemistry are almost universally daunting to the student. The use of organic reaction mechanisms has greatly reduced the memorization, but most organic books skimp a bit on explaining how to write a clear reaction mechanism in order to limit their already gargantuan size (and cost). Along comes *Arrow Pushing in Organic Chemistry* by Levy (director of synthetic chemistry, Intradigm Corp.), a book that tries to clearly and succinctly explain writing organic mechanisms to these students. It does an excellent job in this. The work includes a large number of challenging end-of-chapter problems, with complete answers in the appendix (this appendix accounts for nearly half of the book). These problems may be too challenging for the typical sophomore organic student who may rely too much on the complete answers. This monograph is an excellent supplement but not a replacement for sophomore-level organic chemistry course resources. Most other monographs on organic reaction mechanisms are geared for the advanced undergraduate or graduate student. **Summing Up:** Recommended. ★★ Lower-division undergraduate organic chemistry students.—*J.H. Glans, Sacred Heart University*

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The Periodic Table of Videos

URL: http://www.periodicvideos.com/index.htm

[Visited Nov'08] Martyn Poliakoff and his colleagues (all, Univ. of Nottingham, UK) have produced a fascinating collection of video clips covering the 118 elements in the periodic table. From hydrogen to ununoctium, each element has its own short video, all recorded and