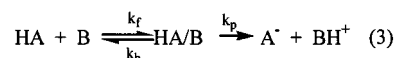


Additions and Corrections

Proton-Transfer Reactions between Nitroalkanes and Hydroxide Ion under Non-Steady-State Conditions. Apparent and Real Kinetic Isotope Effects [*J. Am. Chem. Soc.* **2000**, *123*, 1579–1586]. YIXING ZHAO, YUN LU, AND VERNON D. PARKER*

The intermediate in mechanism 3, HA/B, was not included in eq 3. The correct equation is:



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Book Reviews

Topics in Current Chemistry. Volume 208. Organoselenium Chemistry: Modern Developments in Organic Synthesis. Edited by Thomas Wirth (University of Basel). Springer Verlag: Berlin, Heidelberg, New York. 2000. x + 260 pp. \$178.00. ISBN 3-540-66516-1

This book provides an update on the development of synthetic organoselenium chemistry. It starts with a brief historical review that provides citations to previous reviews and books in the area and summarizes the nomenclature of selenium functional groups. The chapters that follow are mostly written by experts in the various areas and concentrate on developments of the past decade, with the bulk of the references from the period 1985–1998.

The first chapter covers electrophilic selenium reagents. There is a strong focus on the addition of ArSeX reagents to double and triple bonds, especially intramolecular reactions with various oxygen and nitrogen nucleophiles. There is a good summary of the chiral aryl selenides that have been examined for asymmetric additions and of several systems that use organoselenium reagents and oxidants in a catalytic cycle (this topic is also treated in the last chapter on selenium catalysts).

Next is a chapter on nucleophilic organoselenium reagents of type RSeM, where M is one of several metals (Li, Na, K, Al, B, Si, Sn) and R is usually aryl but can be alkyl, silyl, or stannyl. This chapter also covers polymer-bound organoselenium reagents and chiral R*SeM reagents that have been explored for asymmetric opening of epoxides.

A third chapter on reagents for the preparation of organoselenium compounds addresses selenium-stabilized carbanions, mainly α -metallo-selenides, but also reviews the limited literature of metalated selenoxides and selenones. The authors systematically discuss the principal methods for the preparation of α -metalated organoselenium compounds: deprotonation, lithium–selenium exchange, metal–halogen exchange, and addition to selenium-substituted multiple bonds.

There are two chapters that address reactions for removal of organoselenium moieties after they have been introduced by the methods outlined above. One provides an extensive treatment of the use of radical chain reduction of organoselenium compounds to produce alkyl and acyl radicals, which can be trapped with hydride reducing agents or which add to multiple bonds intra- and intermolecularly. The other chapter discusses selenoxide elimination (to form alkenes, alkynes, and allenes), and selenoxide [2,3]sigmatropic rearrangement (to form allyl alcohols). This chapter also includes a summary of current progress on the preparation and utility of chiral nonracemic selenoxides.

There are also two chapters on some of the less common functional groups in organoselenium chemistry. The first, entitled “Selenium at Higher Oxidation States”, presents a potpourri of recent developments on the chemistry of selenonium salts, the reactions of selenones, and the uses of selenium dioxide, selenoxides, seleninic acids, and various

selenium halides as oxidants. The second covers the synthesis and reactions of selenocarbonyl compounds ($\text{R}_2\text{C}=\text{Se}$).

Finally, there is a chapter on the use of organoselenium compounds as catalysts, either as chiral ligands for transition metals, as reagents for the electrophilic addition to alkenes, or as reagents for the epoxidation and allylic hydroxylation of alkenes.

I found the book to contain a wealth of interesting chemistry, but the absence of a subject index made it difficult to find specific information. There also could have been more heavy-handed editing so that the reader is not confused (e.g., the RSe group is referred to variously as the selenenyl group, the selanyl group, and the seleno group) and so that incorrect nomenclature is not propagated: e.g., the selenium analogues of sulfones (R_2SeO_2) are both referred to as selenones (correct) and as selones, and PhSeH is referred to as benzeneselenol (correct) and also phenylselenol.

Hans J. Reich, *University of Wisconsin, Madison*

JA0047471

10.1021/ja0047471

Analysis of Environmental Endocrine Disruptors. Edited by Lawrence H. Keith (Waste Policy Institute), Tammy L. Jones-Lepp (United States Environmental Protection Agency), and Larry L. Needham (Centers for Disease Control and Prevention). American Chemical Society: Washington, DC. 2000. (Distributed by Oxford University Press.) x + 174 pp. \$75.00. ISBN 0-8412-3650-X

This book contains a collection of many of the papers presented at the 216th American Chemical Society National Meeting (1998) on issues surrounding endocrine disrupting chemicals (EDCs) and their effects on humans, wildlife, and research animals. EDCs represent a variety of substances that may act adversely on the endocrine systems of living organisms, including humans. Some of the issues addressed include the development of screening methods for EDCs, current challenges to monitoring and measuring EDC levels, and current regulation and policy involving EDCs in the environment and food.

JA004870S

10.1021/ja004870S

Advances in Polymer Science. Volume 153. Biopolymers, PVA Hydrogels, Anionic Polymerisation, Nanocomposites. Edited by H. Waldmann (Max-Planck-Institut für Molekular Physiologie). Springer-Verlag: Berlin, Heidelberg, New York. 2000. 221 pp. \$124.00. ISBN 3-540-67313-X.

This book is the latest volume in the Advances in Polymer Science series. Several volumes in this series are published each year, and each volume consists of one or more authoritative review articles, written by international experts, on topics of strong current interest to the polymer community. A volume may be devoted to a single subarea of polymer science, or it may cover several topics. The present volume includes reviews on the following diverse topics: "Polynucleotide Analogues", by M. J. Han and J. Y. Chang; "Structure and Applications of Poly(vinyl alcohol) Hydrogels Produced by Conventional Crosslinking or by Freezing/Thawing Methods", by C. M. Hassan and N. A. Peppas; "Applications of 1,1-Diphenylethylene Chemistry in Anionic Synthesis of Polymers with Controlled Structures" by R. P. Quirk, T. Yoo, Y. Lee, J. Kim, and B. Lee, and "Device Applications of Polymer-Nanocomposites" by D. Y. Godovsky.

The review on polynucleotides includes sections on synthesis and physicochemical properties, alteration of polynucleotide analogues, catalytic activity, applications, and future perspectives. The chapter on poly(vinyl alcohol) (PVA) hydrogels covers structure and properties of PVA; synthesis, properties, and crystallization of PVA hydrogels; synthesis of hydrogels of PVA and PVA blends by freeze/thaw techniques; and biomedical/pharmaceutical applications of PVA. The review on 1,1-diphenylethylene (DPE) chemistry describes the use of DPE to synthesize polymers with well-defined structures. Sections in this chapter include a review of reactions of low-molecular-weight and polymeric alkyl lithium compounds with DPE, polymeric DPE initiators for block copolymer synthesis, functionalization of anionically synthesized polymers with DPE, DPE macromonomers, and difunctional and multifunctional initiators and living linking agents based on DPE. The final chapter, on device applications of polymer-based nanocomposites, reviews the synthesis of these hybrid materials and the basic physical processes determining their operation, and contains sections on electroluminescence, light-emitting diodes, photoconductivity, sensors, magnetic storage, and future perspectives.

This book would make a superb addition to any science or engineering library, where it would be a valuable resource to anyone seeking an authoritative introduction to either the basics or the current state-of-the-art in any of these areas. Especially noteworthy is the thorough coverage of each subject, the extensive and up-to-date referencing, and the subject index. This volume displays the high technical quality, timeliness, and production values that make the Advances in Polymer Science series essential for any institution focusing on polymer education and research.

Jimmy W. Mays, *University of Alabama at Birmingham*

JA0048376

10.1021/ja0048376

Advances in Catalysis. Volume 45. Impact of Surface Science on Catalysis. Edited by Bruce C. Gates (University of California, Davis) and Helmut Knozinger (University of Munich). Academic Press: San Diego and London. 2000. 448 pp. \$150.00. ISBN 0-12-007845-7.

This volume, the latest in a long and excellent series devoted to catalytic science, is the first devoted to a single topic: the impact of surface science on catalysis. This is a superbly written, seven-chapter volume covering a bit of the 30-year history of surface science but focusing on its present status and how surface science, in the words of the editors, "continues to shore up the foundation of catalytic science".

The chapters, each written by internationally recognized experts in the subject area, include an overview of the dynamics of surface reactions, the use of density functional theory in the context of describing surface reaction paths, the characterization of surface processes using scanning tunneling microscopy, the use of microcalorimetry to gain numerical values of reaction energetics, reactions on well-characterized oxides, planar models of catalytic systems constructed from metal thin films deposited on crystalline oxides, and sum-frequency generation as a tool for monitoring surface reactions at

relatively high pressures on single-crystal metals. All the chapters are thoroughly referenced, making this a wonderful resource for further reading on topics of interest.

Although there are very strong roles played here by ultrahigh-vacuum experiments, there are clearly serious efforts being made to address practical catalytic problems through the choice of reaction systems and the study of relations between, for example, single-crystal metals and supported metal particles as models for selected reactions of great interest, e.g., catalytic oxidation, nitric oxide reduction, partial oxidation, and hydrogenation. The impact of scanning probe methods is evident throughout the volume but particularly in the chapter devoted to scanning tunneling microscopy. Fascinating advances in theory, i.e., developing concepts from calculations, are evident in the chapter devoted to density functional theory. Theory is clearly incorporated in many other chapters, e.g., interpreting microcalorimetry data. Advances in instrumentation are evident in the chapter on sum-frequency generation, where the power of this nonlinear optical process is illustrated over a pressure range from ultrahigh vacuum to 700 Torr.

In summary, this particular volume of Advances in Catalysis does a splendid job of covering the reciprocal relationship between surface science and catalytic science in the form of the progress, present status, and future opportunities of these fields.

J. M. White, *University of Texas at Austin*

JA004810M

10.1021/ja004810m

Isotope Production and Applications in the 21st Century. Proceedings of the 3rd International Conference on Isotopes. Edited by Nigel R. Stevenson (TRIUMF, Canada). World Scientific: Singapore, New Jersey, London, Hong Kong. 2000. xxiv + 488 pp. \$112.00. ISBN 981-02-4200-X.

The focus of this book and the conference from which it is derived is on isotope production and applications in medicine, industry, and the environment. New developments on the title subject are covered in depth as well as research in radiopharmaceuticals, agricultural and analytical applications of isotopes, radiocarbon dating, AMS and PET, among others. The closing chapters examine possible future trends in isotope production and applications.

JA015207M

10.1021/ja015207m

Unified Chromatography. Edited by J. F. Parcher (University of Mississippi) and T. L. Chester (The Procter and Gamble Company). American Chemical Society: Washington DC. 2000. (Distributed by Oxford University Press.) x + 250 pp. \$110. ISBN 0-8412-3638-0

What is unified chromatography? According to the editors, it is a concept of chromatography that includes and combines various, seemingly disparate separation techniques, such as gas chromatography and liquid chromatography, and, in their words, removes the "barriers that artificially distinguish and limit essentially similar chromatography techniques, thus opening new understanding and even more possibilities". A symposium on the subject matter was held in August 1998, and this book compiles many of the presentations given there, as well as a few postsymposium papers. Unusual chromatographic techniques and theories are explored in this book, with topics ranging from "Exploring Multicomponent Phase Equilibria by Monte Carlo Simulations: Toward a Description of Gas-Liquid Chromatography" to "Packed Capillary Column Chromatography with Gas, Supercritical, and Liquid Mobile Phases".

JA015201X

10.1021/ja015201x