Additions and Corrections

Novel [2,3]-Sigmatropic Rearrangement for Carbon−Nitrogen Bond Formation [*J. Am. Chem. Soc.* **2001**, *123*, 7734−7735]. TERUHIKO ISHIKAWA,* MASATOMO KAWAKAMI, MIYUKI FUKUI, AYAKO YAMASHITA, JIN URANO, AND SEIKI SAITO*

We have recently become aware of the presence of two previouus papers by Davies[1] very closely related to our work entitled "Novel [2,3]-Sigmatropic Rearrangement for Carbon−Nitrogen Bond Formations" recently published in this journal.[2] These two previous papers are clearly indicating that the discovery of [2,3]-sigmatropic rearrangement of this class must be credited to Davies.[1] Our insufficient literature search is surely responsible for this serious matter. Therefore, it is appropriate that we should retract our recent paper[2] concerned with this chemistry.

(1) (a) Davies, S. G.; Jones, S.; Sanz, M. A.; Teixeira, F. C.; Fox, J. F. *Chem. Commun.* **1998**, 2235−2236. (b) Bull, S. D.; Davies, S. G.; Jones, S.; Ouzman, J. V. A.; Price, A. J.; Watkin, D. J. *Chem. Commun*. **1999**, 2079−2080.

(2) Ishikawa, T.; Kawakami, M.; Fukui, M.; Yamashita, A.; Urano, J.; Saito, S. *J. Am. Chem. Soc.* **2001**, *123*, 7734−7735. Our first manuscript having the same title as this paper covering the content of ref 1a was submitted to this journal on September 21, 1998, whereas Davies submitted his first manuscript (ref 1a) to *Chem. Commun.* on August 5, 1998. These records are consistent with the idea that Davies and we were independently concerned with the same chemistry at the same time.

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Book Reviews *

Organometallic Catalysts and Olefin Polymerization. Catalysts for a New Millennium.. Edited by Richard Blom (Sintef Applied Chemistry, Norway), Arild Follestad (Borealis AS, Norway), Erling Rytter (NTNU, Norway), Mats Tilset (University of Oslo, Norway), and Martin Ystenes (NTNU, Norway). Springer-Verlag: Berlin, Heidelberg, New York. 2001. xii + 444 pp. $149.00. ISBN: 3-540-41402-9.

This book presents an overview of the recent developments in the field of organometallic catalysts for olefin polymerization and provides 39 chapters describing both theoretical and experimental approaches directed toward defining how these catalysts work. The chapters are organized under the following sections: Group IV Catalysts and Cocatalysts; Non-Group IV Catalysts; Traditional Catalysts; Polymerization Mechanisms, Catalyst Structure, and Polymer Structure Relationships; Polymerization, Copolymerization, Nontraditional Monomers, and Polymer Characterization; and Catalyst Heterogenization and Particle Microreactor Effects. References as recent as 2000 are provided.

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Progress in Inorganic Chemistry. Volume 49. Edited by Kenneth D. Karlin (Johns Hopkins University). Wiley Interscience: New York. 2001. viii + 700 pp. $125.00. ISBN: 0-471-40223-0.

The wide range of topics in the 49th volume of *Progress in Inorganic Chemistry* is covered in the detail one has come to expect from reviews in this series. The first chapter, "Nonclassical Metal Carbonyls" by Lupinetti, Strauss, and Frenking covers those metal carbonyls in which $\nu_{CO} > 2143$ cm^{-1} and summarizes the physical properties of many of the more than 250 carbonyls that exhibit nonclassical behavior. Doyle and Ren contribute a chapter titled "The Influence of Ligands on Dirhodium(II) on Reactivity and Selectivity in Metal Carbene Reactions." A review of the ligand-design characteristics of importance to the reaction selectivity of the dirhodium complexes used in carbene transfer reactions and other catalytic transformations is given. Unfortunately, the "alphabet soup" of ligand acronyms makes it difficult to follow the discussion. The next chapter, "The Coordination Chemistry of Transition Metals with Hydrogen Chalcogenide and Hydrochalcogenido Ligands" by Peruzzin, De Los Rios, and Romerosa covers the synthesis and reactivity of compounds that contain X^{2-}, HX^{-}, and H_2X ligands, where X = S, Se, Te. The coordination chemistry of phosphinines is the subject of Chapter 4 by Mézailles, Mathey, and Le Floch, and the Texaphrin class of macrocyclic ligands is the topic of Chapter 5 by Mody, Fu, and Sessler. These expanded porphyrins have potential application as photodynamic therapy reagents. In the final chapter, authored by Malinak and Coucouvanis, the chemistry of synthetic Fe−Mo−S clusters and their relevance to the Fe−Mo−S center in nitrogenase is addressed. This review covers the literature since 1985. All the chapters are current and comprehensive and serve to make the book a worthwhile addition to research libraries or to individuals working in one of the areas covered by the reviews.

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Controlled/Living Radical Polymerization. Progress in ATRP, NMP, and RAFT. Edited by Krzysztof Matyjaszewski (Carnegie Mellon University). American Chemical Society: Washington, DC (Distributed by Oxford University Press). 2000. xii + 484 pp. $150.00. ISBN: 0-8412-3707-7.

*Unsigned book reviews are by the Book Review Editor.

This book emerged from the ACS Symposium "Controlled Radical Polymerization" held in New Orleans in 1999. It offers an introduction to the field and reviews recent progress in ATRP, NMP, and RAFT systems. The 30 chapters are divided into the following sections: Advances in Conventional and Controlled Radical Polymerization, Nitroxide-Mediated Polymerization, Atom Transfer Radical Polymerization, Other Methods for Controlled Radical Polymerization, and New Materials by Controlled Radical Polymerization. References as current as 1999 are included.

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Calixarenes for Separations. Edited by Gregg J. Lumetta (Pacific Northwest National Laboratory), Robin D. Rogers (University of Alabama), and Aravamudan S. Gopalan (New Mexico State University). American Chemical Society (distributed by Oxford University Press). 2000. x + 366 pp. $125.00. ISBN 0-8412-3660-7.

This book, the result of a symposium on the title subject held during the 217th ACS National Meeting in Anaheim, CA, 1999, explores calixarene host−guest systems that may have applications to the field of separations chemistry. The 24 chapters are organized under the following sections: General, Calixarene−Cation Complexation, Calixarene−Anion Complexation, and Calixarene Complexation of Neutral Molecules. There are some references as recent as the year of the symposium.

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Carbohydrates in Chemistry and Biology. Volumes 1−4. Edited by Beat Ernst (Universität Basel), Gerald W. Hart (Johns Hopkins University), and Pierre Sinaÿ (École Normale Supérieure). Wiley-VCH: Weinheim. 2000. 2418 Pages. $785.00. ISBN 3-527-29511-9.

This work is composed of two parts, each with two volumes: *Part I: Chemistry of Saccharides* and *Part II: Biology of Saccharides*. The first two volumes are the subject of this review and encompass Part I of the series. Each volume contains the complete table of contents and index for all four volumes of this series.

Volume 1, titled *Chemical Synthesis of Glycosides and Glycomimetics* is a thorough compilation of the most up-to-date synthetic methods in the area of glycosylation chemistry. The first several chapters are focused on key building blocks that are used in oligosaccharide synthesis, such as trichloroacetimidates, glycals and their derivatives, and thioglycosides. Methods of glycosylation are covered next, with a few chapters devoted to well-developed strategies and an additional chapter for lesser-known methods. A discussion of several traditional problems in glycosylation chemistry, protecting group strategies, and orthogonal approaches to oligosaccharide synthesis is also provided. This section has chapters on polymer-supported oligosaccharide synthesis, glycolipid synthesis, and glycopeptide synthesis. Volume 1 ends with several chapters in which the synthesis of oligosaccharide mimics, such as C-oligosaccharides, S-analogues, and saccharide peptide hybrids are discussed.

Volume 2, titled *Enzymatic Synthesis of Glycosides and Carbohydrate Receptor Interaction*, includes a comprehensive set of chapters on the synthesis of carbohydrates using enzymatic methods. The enzymology of glycosyltransferases and glycosidases and the role of sugar nucleotides in complex carbohydrate synthesis are discussed, as well as the novel and exciting methodology involved in recombinant oligosaccharide production.

The second section of Volume 2 focuses on the study of carbohydrate−protein interactions. One chapter is devoted to the physical chemistry of these types of interactions with respect to the intermolecular forces involved, phases, and solvation issues, among others. The current tools for the analysis of these interactions are also presented and include mass spectrometry for structure determination and conformational studies using NMR and diffraction methods. Two relatively new techniques that are covered are laser photochemically induced dynamic nuclear polarization (CIDNP)-NMR and Biacore, which uses surface plasmon resonance to investigate these intermolecular interactions.

The final section of Volume 2 contains a comprehensive chapter on carbohydrate−carbohydrate interactions. This includes coverage of the significance of carbohydrate−carbohydrate interactions, the molecular forces involved, and the techniques to study them. The final chapter is devoted to carbohydrate−nucleic acid interactions. In this chapter, the general aspects of carbohydrate−DNA binding are discussed, as well as several specific cases involving pertinent antibiotics and antitumor agents. Aminoglycoside antibiotics are covered in a section on carbohydrate−RNA binding.

These two volumes are well-organized, with numerous explanatory synthetic and mechanistic schemes and useful data tables. They represent a truly comprehensive overview of the current research in the chemistry of saccharides, covering all facets of this broad subject. Each chapter is written by leading researchers in their area of expertise. The general reader will find the books to be an excellent introduction to the various topics covered, and the specialist will find the books an extremely useful reference resource.

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Scanning Probe Microscopy and Spectroscopy. Theory, Techniques, and Applications. 2nd Edition. Edited by D. W. Bonnell (University of Pennsylvania). Wiley-VCH: New York. 2001. xiv + 494 pp. $130. ISBN 0-471-24824-X.

This is a timely update of a nice introduction to the field of scanning probe microscopy. Chapters are contributed by some of the leading practioners in the field, including the editor Bonnell herself, Colton, Hamers, Kalanin, and Tersoff. As with many such edited books, the level of presentation is somewhat uneven. Bonnell's introductory chapter comes in with a very nice overview of the field. Other chapters assume varying levels of background and expertise in the field.

The book has the same structure and many of the same authors of particular chapters as the first edition. It has been expanded somewhat, with a chapter added on scanning near-field optical microscopy and new sections in several other chapters. Other chapters are included on surface structure and spectroscopy, nanomechanics, electrostatic and magnetic force microscopy, biological and electrochemical applications, ballistic electron emission microscopy, tip preparation and characterization, and the theory of scanning tunneling microscopy. Some of the figures (oddly, including some from the first edition) have been reproduced rather poorly.

Overall, this is a clear introduction to the field of scanning probe microscopy with sufficient detail to give incoming graduate students and other scientists and engineers the necessary background to jump into the literature in their specific area of interest.

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Chemical Modeling: Applications and Theory. Volume 1. Senior Reporter: A. Hinchcliffe (UMIST, Manchester, U.K.). Royal Society of Chemistry: Cambridge. 2000. xviii + 506 pp. £109.50. ISBN: 0-85404-254-7.

This is the first volume of a planned biannual series of Specialist Periodical Reports. The series, *Chemical Modeling*, is in many ways a successor of the four volumes on theoretical chemistry published in the late 1970s but allocates more space to applications of computational chemistry. In this first volume, a minimal amount of historical background is given to cover the developments in the last 20 years before the more recent literature is covered.

Since it is virtually impossible to cover the entire range of the field, the first question for such a book is which topics to select for review. The eight chapters chosen to be featured in this volume are written by researchers who are active in their respective fields. D. Pugh (Strathclyde) reviews the calculation of electric multipoles, polarizabilities, and hyperpolarizibilities; T. E. Simons (Democritus U.) covers atomic structure calculations; P. L. A. Poplier, F. M. Aicken, and S. E. O'Brien (UMIST) write about the Atoms-in-Molecules method; and R. I. Maurer and C. J. Reynolds (Essex) evaluate the modeling of biological systems. In later chapters, P. Pyykkö (Helsinki) and H. Stoll (Stuttgart) give an overview of relativistic pseudopotential calculations, M. Springborg (Saarbrücken) reviews density functional theory (DFT), S. Wilson (Rutherford Appleton) describes many-body perturbation theory, and J. J. Ladik (Erlangen) covers the calculation of large molecules, particularly polymers.

As is usual in such a multiauthored volume, the scope, length, and amount of detail varies greatly from chapter to chapter. Here, they range from a focused review of a specialized field (e.g., 38 pages on electric multipoles) to a general overview of a broad field (e.g., 58 pages on DFT) to an extensive and in-depth discussion of the author's work (105 pages on atomic structure calculations). All of the chapters cover the literature until early 1999, with the bulk of the extensive reference list coming from the past decade. The discussion of newer contributions is planned for future volumes.

It is a sign of the growing maturity of computational chemistry that there are now several books summarizing its recent progress and applications, including a number of introductory texts. Among the widely available recent multivolume sets are the series *Reviews in Computational Chemistry*, edited by Boyd and Lipkowitz (currently with sixteen books), and the five-volume *Encyclopedia of Computational Chemistry*, edited by Schleyer. The key question is, therefore, how this series will compare with the ones already available. Both of the series mentioned above offer a more coherent and concise introduction to a larger range of topics. The virtue of this series is that it offers a more timely and detailed overview of the recent literature, particularly when it is focused on the past few years in a given field. It will, thus, be most useful to readers who have a solid foundation in a given area and want to catch up on the most recent developments. Because of the relatively high price, it will be primarily attractive to libraries that might want to acquire the complete series rather than to the individual researcher.

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Carbohydrates: The Sweet Molecules of Life. By Robert V. Stick (The University of Western Australia). Academic Press: San Diego, San Francisco, New York, Boston, London, Sydney, Tokyo. 2001. xiv + 256 pp. $64.95. ISBN: 0-12-670960-2.

There has been a renaissance in the area of carbohydrate chemistry over the past two decades. However, when it comes to choosing a book that could be used to teach a course in this important subject to advanced undergraduate or graduate students, there are very few options. This book fills that gap.

The book assumes no prior knowledge of carbohydrate chemistry. Chapters 1−5 (approximately 30 pages) are introductory and provide the basics of carbohydrate structure. Most students will find these chapters to be a review of material covered in their introductory organic chemistry course, for example, the Fischer proof, mutarotation, Haworth projections. However, also included is a discussion of anomeric effects (endo-, exo-, and reverse) and conformational nomenclature. This portion of the book is written from a historical perspective and includes photographs of Emil Fischer and his laboratory.

Once the basics are presented, the book then explores synthetic carbohydrate chemistry. A systematic presentation of all of the major protecting groups for the hydroxyl and amino groups is included in Chapter 6. In the following chapter, the reactions of monosaccharides, including the synthesis of modified sugars (e.g., halosugars and deoxysugars) are reviewed. The important area of glycoside synthesis is covered in the next two chapters. In the first (Chapter 8), the basics of glycoside bond assembly are introduced, and the major classes of glycosyl donors are systematically reviewed. Also covered here is the preparation of *C*-glycosides. The use of these glycosyl donors in the synthesis of complex oligosaccharides is then described in Chapter 9. In addition to discussing strategies for the solution-phase synthesis of oligosaccharides, this chapter presents recent progress in the area of solid-phase synthesis of these molecules. The last section of the chapter deals with the synthesis of oligosaccharides by enzymatic means with a heavy emphasis on the use of glycosidases.

The remainder of the book is focused on the occurrence and biology of carbohydrates. A chapter on naturally occurring oligo- and polysaccharides is included (Chapter 10), and the area of glycobiology is introduced in Chapter 11. All of the basics are provided in this chapter, and a number of references are included that direct the reader to additional reviews and books on the topic. In the last chapter, the author discusses the potential use of oligosaccharides in the preparation of anti-cancer vaccines, which is an area of emerging importance. Finally, there is a very useful appendix that includes information about carbohydrate nomenclature and the literature of carbohydrates.

This book is clearly and entertainingly written. The coverage is excellent and many emerging areas (e.g., programmable one-pot oligosaccharide synthesis, solid-phase oligosaccharide synthesis, carbohydrate vaccines) are included. The reference list is similarly excellent and up-to-date; for example, a number of references from 2000 are included. Each chapter is broken down into sections and each section has its own reference list. This approach makes extracting citations more manageable than it might be from single list at the end of the chapter. The author also does an excellent job of correlating synthetic methods with the individuals who were responsible for their development. This book will be an extremely useful addition to the library of professionals with interests in carbohydrate chemistry. Moreover, students wanting to learn about this area will find this an informative and easy-to-read book.

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Combinatorial Chemistry. A Practical Approach. Edited by Hicham Fenniri (Purdue University). Oxford University Press: Oxford. 2000. xxxii + 476 pp. $70.00. ISBN: 0-19-963754-7.

The aim of the 16 chapters of this guidebook is to introduce the novice to all of the major areas of combinatorial chemistry from both an experimental and a theoretical perspective. Key combinatorial methods for generating chemical libraries are provided, as are currrent methods for library screening and evaluation. This book also gives detailed protocols on solid-, liquid-, and solution-phase organic synthesis and explores the use of robotics and automation. In addition, modern approaches to drug, catalyst, receptor, and materials development and discovery are covered. References through the late 1990s accompany each chapter.

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