Additions and Corrections

Comparison of the Structures of the Five-Coordinate Cobalt(II) Pyridine, Five-Coordinate Cobalt(III) Methyl, and Six-Coordinate Cobalt(III) Methyl Pyridine Complexes of Octaethylporphyrin [*J. Am. Chem. Soc.* **1994**, *116*, 7189−7195]. JACK S. SUMMERS, JEFFREY L. PETERSEN, AND ALAN M. STOLZENBERG*

Page 7192, Figure 3 and its caption should appear as given below.

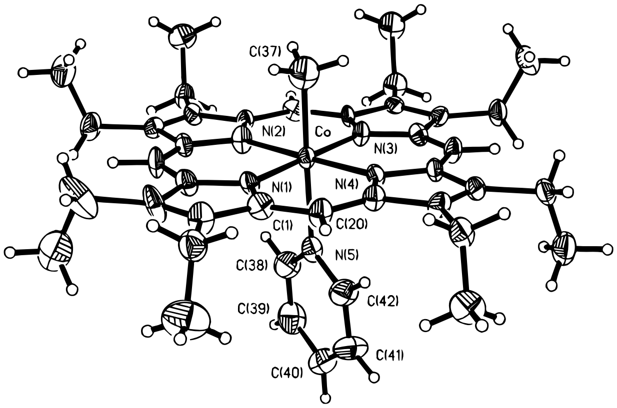

Figure 3. ORTEP diagram of the molecular structure of Co(OEP)(CH_3)(Py), $C_{42}H_{52}CoN_5$. The labeling of the OEP atoms, which has been omitted for sake of clarity, is the same as in Figure 2. Thermal ellipsoids are scaled to enclose 30% probability.

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Book Reviews

Excipients and Delivery Systems for Pharmaceutical Formulations. Edited by D. R. Karsa (Akros Chemicals) and R. A. Stephenson (Chemical Consultant). The Royal Society of Chemistry: Cambridge, U.K. 1994. viii + 192 pp. £39.50. ISBN 0-85404-715-8.

This book consists of 17 unedited articles, some as brief as five pages, which were taken from the proceedings of the Formulate'94 Symposium organized by the British Association for Chemical Specialities. A one-page introduction seems to be the only contribution of the editors to this book which consequently suffers from the following common problems associated with the conference proceedings: repetitive or inconsistent use of terms; repetition of data tables; inconsistency in the format and numbering of the tables, figures, and references; use of conversational phrases such as "Good Morning!... This presentation... This morning." Many of these problems would be easily avoided if the editors had read the articles before the book was printed.

The book contains articles that are related to the two important but different aspects of pharmaceutical formulations, namely "excipients" and "delivery systems", without logically classifying the two systems.

The first two articles in the book focus on the lack of harmonization for excipient standards between the different pharmacopoeias and describe the attempts to globalize the use of excipients. However, if these two well-written articles were combined, an excessive overlapping of the subject matter could be prevented.

The third article addresses the approach of the FDA to the regulation of bulk pharmaceutical chemical production and points out the fact that there are many unresolved issues regarding process deviation, process failures, and reprocessing as they pertain to bulk pharmaceutical chemicals. The fourth article is an overview of the applications of the cross-linked acrylic acid polymers in various types of pharmaceutical formulations. The following article claims that the feasibility of the development of a transdermal patch for Cyclizine is marginal provided that a permeation enhancer and a relatively large patch are used.

One of the most informative articles in this book is the fifth article, which discusses the role of powder surface characteristics in product performance and the effects of various types of processing on surface properties. This article demonstrates the use of contact angle measurements and microcalorimetric approaches in predicting the consequence of both changes in materials and in processing.

The sixth article is entitled Binders for Granules and Tablets. One would expect to find some information on the most commonly used binders; instead, only one specific binder is promoted. Either the title or the content of this article should have been modified.

The twelfth article, which describes the use of Xanthan gum in hydrophilic matrix drug delivery systems, contains some interesting unpublished data which may be beneficial to the formulation scientist.

The fourteenth article, which is a well-written one, reviews the use of glycerides as controlled release matrices. The author presents the chemical and physical properties of glycerides and discusses the relationship between their properties and the subsequent product performance in terms of the dosage form structure, the drug release kinetics, and the drug bioavailability.

In addition to the above, the book has some other articles, which either are very short or, in the opinion of the reviewer, contain less scientific and more promotional information on some excipients and delivery systems; therefore, the reviewer has no further comments on them.

As a whole, the articles in the book exhibit a wide range of quality from very poor to very good in terms of both content and presentation. Therefore, this book should be considered overall as a neither complete nor concise overview of the excipients and delivery systems for pharmaceutical formulations.

Metin Çelik, *Rutgers University*

JA955176T

S0002-7863(95)05176-6

Heterogeneous Reaction Dynamics. By Steven L. Bernasek (Princeton University). VCH: New York. 1995. xii + 158 pp. $55.00. ISBN 0-89573-742-6.

This is a very nice little monograph, written by an active practitioner in the field, which presents a broad view of important phenomena related to the dynamics and kinetics of surface chemical physics. The following topics are discussed in this book: (1) gas-surface molecular beam scattering with an analysis of the translational, rotational, and vibrational energy distributions of the inelastically scattered molecules; (2) adsorption, including physical adsorption, chemisorption, and homoepitaxial growth of materials as monitored by thermal energy atom scattering; (3) surface diffusion as monitored by laser-induced thermal desorption with refilling and time-resolved infrared spectroscopy to measure the migration of chemisorbed carbon monoxide from terrace to step sites on a surface; (4) direct and trapping mediated dissociative chemisorption employing supersonic molecular beams; (5) recombinative thermal desorption with an analysis of the translational, rotational, and vibrational energy distributions of the desorbing products; (6) the Lanmuir−Hinshelwood surface oxidation reaction of carbon monoxide with an analysis of the translational and vibrational energy distributions of the carbon dioxide product; and (7) isolation and identification of intermediates in thermally driven surface decomposition reactions using vibrational spectroscopies. Although there are numerous specific examples illustrating these various topics, there is insufficient theory (or even phenomenology) for an uninitiated reader to put the material in perspective. If used in a formal class setting, the students will need supplementary material in the lectures. Likewise, for independent reading by neophytes (for example, advanced undergraduate or beginning graduate students), this monograph will need to be supplemented by other sources.

To summarize, this book presents a tantalizing smorgasbord of a number of important topics related to surface reaction dynamics and is successful in achieving its stated goals.

W. Henry Weinberg, *University of California, Santa Barbara*

JA955359F

S0002-7863(95)05359-5

An Atlas of Fullerenes. By P. W. Fowler (University of Exeter), D. E. Manolopoulos (University of Nottingham). Oxford: New York. 1995. viii + 392 pp. $98.00. ISBN 0-19-855787-6.

The term fullerene refers generally to any member of the large family of carbon-cluster molecules with the chemical formulation C_n. For an arbitrary n, the number of possible geometrical isomers is very large. This atlas provides fullerene researchers with a systematically arranged set of fullerene structures and some of their associated molecular properties. Each tabulated isomer is identified by a unique coding and is listed together with the point group symmetry, the number of distinct ^{13}C NMR peaks and their relative intensities, the number of IR and Raman active vibrations, the HOMO−LUMO energy separation, and a drawing of the isomer viewed along a principle symmetry axis. The extensive tables are accompanied by seven chapters that offer a clearly written, well-organized, and largely self-contained discussion of trends, patterns, and rules relevant to the study of fullerenes in general.

Chapter 1 presents a brief historical review of the discovery of fullerenes. The objective is not to give a complete account but rather to emphasize the systematic aspects of fullerene structures. Chapter 2 discusses the systematic methods by which the structures of fullerenes may be generated and coded. Two complementary methods for generating fullerene isomers are discussed, one based on Coxeter's icosahedral triangulations of the sphere and the other on the ring spiral algorithm. Proceeding from the latter, the authors identify and catalog all fullerene polyhedra of a given vertex count. The resulting fullerene isomer lists (collected in the atlas tables) contain detailed entries for all possible fullerene isomers in the range $n = 20-50$ and all isolated pentagon isomers in the range $n = 60-100$. The text also provides the complete code and all necessary documentation for a computer program that will allow the tables to be extended as necessary.

In Chapter 3 the authors give a brief discussion of Hückel molecular orbital (HMO) theory applied to fullerenes. It is argued that HMO theory is the simplest model of fullerene electronic structure which is capable of distinguishing between isomeric structures and is therefore well suited to reveal the systematics of the relationship between geometric and electronic structure in the fullerene family. In this application, HMO theory has the advantage that it requires only the scheme of carbon connectivity in order to compute the pattern of orbital energies. Magic numbers and electron-counting rules for sequences of fullerene isomers obtained from the HMO approach are presented. In Chapter 4 the discussion of fullerene stability is extended beyond the level of HMO theory and a qualitative analysis is presented of issues that affect the stability of fullerenes, including steric strain, local curvature, rehybridization, and the isolated pentagon rule. For example, the consequences of fullerene curvature are discussed in a qualitative manner that permits the relative stabilities of different fullerene isomers to be assessed without resorting to detailed electronic structure calculations.

Chapter 5 deals with symmetry and the spectroscopy of fullerenes. All possible fullerenes are classified within 28 molecular point groups and the classification is discussed with respect to molecular properties such as optical activity, dipole moment, NMR, and vibrational spectroscopic signatures.

Chapter 6 provides a discussion of the Stone−Wales rearrangement, the process by which fullerene isomers can interconvert, allowing thermodynamically unfavorable structures to convert to favored ones. Chapter 7 concentrates on proposed mechanisms for growth and fragmentation by the insertion and extrusion of C_2 fragments.

This atlas is a timely and important addition to the literature on the physical science of fullerenes. It comes at a time when the number of fullerenes available for study is rapidly expanding. The authors have provided a systematic, well-organized atlas that will greatly aid all fullerene researchers. It will be of particular utility to experimentalists seeking to analyze ^{13}C NMR and vibrational spectra and to computational chemists wishing to carry out detailed structure/property calculations for specific fullerene isomers.

Anthony H. Francis, *University of Michigan*

JA955342X

S0002-7863(95)05342-X

Detection Methods for Cyanobacterial Toxins. Edited by G. A. Codd (University of Dundee, U.K.), T. M. Jefferies (University of Bath, U.K.), C. W. Keevil (Centre for Applied Microbiology and Research, Porton Down, U.K.), and E. Porter (National Rivers Authority, Bristol, U.K.). The Royal Society of Chemistry: Cambridge, U.K. 1994. ix + 191 pp. $89.95. ISBN 0-85186-961-0.

The chemistry of the cyanobacteria represents an important source of numerous novel compounds; these include potent toxins which have serious ecological and health related consequences. *Detection Methods for Cyanobacterial Toxins* addresses these issues via a series of papers originally presented at the First International Symposium on Detection Methods for Cyanobacterial Toxins, Bath, U.K., September 27−29, 1993. While this topic initially appeared to be overtly specific and aimed at a select group of researchers, I was pleasantly surprised by the breadth of the subject matter this volume encompasses. This book is a timely addition to the field of cyanobacteria research which offers specific methodological applications that will be of interest to scientists of diverse disciplines.

As a symposia volume, this book obviously benefited from the planning of the steering committee. Thus the 20 "oral presentations" provide an overview of the field which includes health aspects, structural analyses, detection methods, and bioassay techniques. More specific data, for instance that generated in particular geographic locales, was relegated to a poster session, and a selection of 16 short examples are included here. The editors have done a credible job of compiling these presentations in a logical, readable manner while maintaining the strength of this volume: a showcase of novel approaches to toxin isolation and detection techniques. Of particular importance are the novel and rapid alternate bioassays to established protocols; these will be of tremendous benefit to public health professionals and environmental monitoring agencies.

The sole complaint I would voice, and this is largely a matter of personal preference, is the lack of a cohesive introduction and/or summary chapter. Clearly this book, and potentially readers outside the field, would benefit from an overview of the cyanobacteria and the roles of their chemistry. Moreover, this would have been an ideal forum to update the references; those included are now approximately 3 years old. Nonetheless, *Detection Methods of Cyanobacterial Toxins* has accomplished the difficult task of integrating experimental procedures (typically left to journals) with an overview of the field (the realm of textbooks). This book will be an important resource to seasoned cyanobacteria researchers and newcomers, as well as those scientists interested in applying these novel methodologies to their own research interests.

Marc Slattery, *The University of Mississippi*

JA9551749

S0002-7863(95)05174-2

Stereocontrolled Organic Synthesis. Edited by Barry M. Trost (Stanford University). Blackwell: London. 1994. x + 482 pp. £70.00. ISBN 0-86542-833-6.

The areas of selectivity and stereoselective synthesis are a the focus of significant activity in the field of organic chemistry. This book attempts to survey them from "methodology to strategy and from abiological to biological approaches." These are lofty goals which the editor acknowledges are impossible to comprehensively cover in a single volume. Instead, this eclectic collection of 20 contributions presents aspects of each of these areas from leading researchers in the field. The recently published Houben-Weyl volumes entitled *Stereoselective Synthesis* represent the comprehensive reference source in this area, but the price of these volumes puts them out of the range of individual researchers. Hence collections like Trost's fulfill a useful goal.

The scope and depth of the individual reviews vary widely, and authors were clearly given significant leeway in crafting their contributions. Several authors have taken a philosophical approach in discussing synthetic strategies and reaction design. Others are straight to the point, and their manuscripts are filled with details of specific transformations and natural product syntheses. Some authors have focused on their own work, while others have included contributions from others active in the field. Individual articles are typically 15−30 pages in length with 50−200 references.

The opening chapters by Noyori, Narasaka, Mukaiyama, Kobayashi, Meyers, and Koga describe the design and applicability of chiral ligands, bases, auxiliaries, and chiral catalysts for the enantioselective synthesis of useful intermediates including precursors to a variety of natural products. Otera describes the unique reactivity of molecules containing sulfur and oxygen or tin. Reactions of allyl carbonates in the presence of palladium catalysts are described by Mandai and Tsuji. Reetz and Thomas provide overviews of the reactions of organotitanium and organostannanes with electrophilic species with a focus on chemoselectivity and stereoselectivity.

The utility of the Diels−Alder reaction for the synthesis of functionalized cyclohexenes is discussed by Posner, while Ghosez reviews many different classes of cycloaddition reactions including Lewis acid, transition metals, and biocatalyzed processes.

The field of natural product synthesis is examined by Hoffmann, Paquette, and Krief as it relates to polyketide, cyclooctanoid, and pyrethroid synthesis, respectively. Winterfeldt presents a diverse chapter on methods for directed stereoselective reactions. The final chapters describe the utility of biocatalysts with contributions by Halcomb and Wong, Colonna, and Sih and co-workers.

Some of the authors have written widely on the topics they cover in this book, and so it is possible to find comprehensive accounts elsewhere. A few reviews lack a clear focus and unifying theme. Nevertheless a *collection* of such diverse topics makes interesting and stimulating reading for those familiar with the field and provides a useful introduction for graduate students.

Mark Lautens, *University of Toronto*

JA955327S

S0002-7863(95)05327-3

Tellurium-Containing Heterocycles. Volume 53. Edited by Michael R. Detty and Marie B. O'Regan (Eastman Kodak Co.). Wiley and Sons: New York. 1994. ix + 511 pp. $125.00. ISBN 0-471-63395-X.

Organotellurium chemistry has seen rapid development over the last 25 years. Although a handful of earlier reviews on tellurium-containing compounds exist, the need for this current review is evident because many new references have appeared since the most current prior review, reported in 1991. The data for this book was obtained primarily from references and patents from the 1980s and 1990s up to and including 1994.

This book is organized in a systematic manner, making it quite easy to find information about a particular organotelluride. Each chapter covers a separate type of tellurium-containing heterocycle and includes five- and six-membered rings containing tellurium, tellurium analogs of pyrylium dyes, tellurium-containing heterocycles with at least one Group VA (nitrogen, phosphorus, and arsenic) element, tellurium-containing heterocycles composed of Group IVa (carbon, silicon, germanium, and tin) and Group VIa (tellurium, selenium, sulfur, and oxygen) elements, tellurium-containing heterocycles as donor molecules, and tellurium-containing heterocycles with hypervalent or coordination bonds to tellurium. Within each chapter is information regarding nomenclature, synthesis, and physical properties of the particular tellurium-containing heterocycle. In some cases, there is information about the reactions of the specific tellurium-containing compound. The majority of this book is devoted to presentation of the synthesis and physical properties of organotellurides, both in the discussion format as well as in tabular forms. For example, each chapter includes a comprehensive analysis of a vareity of synthetic pathways to each organotelluride, along with tabular surveys of representative synthetic examples and the yields obtained. Additionally, the physical data are represented in numerous tables, including but not limited to ^{1}H NMR, ^{13}C NMR, ^{125}Te NMR (NMR tables include coupling constants as well as expected chemical shifts), IR, UV, dipole moments, bond lengths and angles, redox potentials, rate constants, and ionization energies. One particular strength of this manuscript is the comparison of the physical properties of the organotellurides with the analogous oxygen-, selenium-, and sulfur-containing heterocycles. In summary, this book is an excellent reference for the synthesis and physical properties of a vareity of organotellurides. It will be of most use to those embarking on synthetic routes to tellurium-containing compounds.

Suzanne M. Ruder, *Virginia Commonwealth University*

JA945109J

S0002-7863(94)05109-7

Advances in Photochemistry, Volume 19. By Douglas C. Neckers (Bowling Green State University, OH), David H. Volman (USC-Davis), and Gunther Von Bunau (University of Seigen, Germany). Wiley: New York. 1995. xi + 325 pp. $129.95. ISBN 0-471-04912-3.

This book is a monograph on frontier topics in photochemistry. It is undoubtedly, written for the experts in the field, but the student of photochemistry has by no means been forgotton by the authors. Truly, the original vision for the series of monographs has been maintained, as each topic is thoroughly presented, starting with exhaustive background information and concluding with advanced treatment and future developments. The five major topics have all been written by experts in their respective fields, and the text is organized in such a way as to make each of the topics independent of each other. Hence, while the entire volume may be daunting to the generalist or the novice photochemist, the advanced reader or the expert photochemist would find this monograph to hold a wealth of information on frontier photochemistry.

The choice of cis/trans photoisomerization of stilbenes as the introductory chapter was a very wise choice and provides a thorough review as well as demonstrating the beauty and intricacies of classical photochemical research. As such, the book can be an excellent reference source and is highly recommended for graduate students and academic and reference libraries.

The next three chapters of this volume provide a wealth of information, supported by copious references on advanced and highly specialized topics such as solid state photochemistry; photochemistry and photophysics of semiconductors, and artificial photosynthesis of ammonia using heterogeneous catalysts.

There is no doubt that these are "hot and exciting" research areas in photochemistry and photophysics, and this monograph could easily serve as a definitive source of background information for future researchers.

Joseph B. Addison, *Governors State University*

JA9553011

S0002-7863(95)05301-7