Additions and Corrections

Intramolecular Nucleophilic Addition of Vinylpalladiums to Aryl Ketones [*J. Am. Chem. Soc.* **1999**, *121*, 3545−3546]. LONG GYO QUAN, VLADIMIR GEVORGYAN,* AND YOSHINORI YAMAMOTO*

In this paper, we claim that, to the best of our knowledge, we demonstrated the first examples of catalytic nucleophilic vinylpalladation of electrophiles such as the carbonyl group. Recently, however, our attention has been turned to investigations which correct this statement. A stoichiometric reaction of alkynes with palladium complexes containing $C_6H(OMe)_3$-(CHO) and $C_6H(OMe)_3C(O)Me$ groups was reported (Vicente, J.; Abad, J.-A.; Gil-Rubio, J. *J. Organomet. Chem.* **1992**, *436*, C9−C12. Vicente, J.; Abad, J.-A.; Gil-Rubio, J. *Organometallics* **1996**, *15*, 3509−3519.

Unfortunately, these references were not included in our publication, and we are grateful to Professor José Vicente for pointing out this negligence.

JA995527U

10.1021/ja995527u
Published on Web 09/24/1999

Book Reviews

Biopolymers at Interfaces. Edited by Martin Malmsten (Institute for Surface Chemistry, Stockholm, Sweden). Surfactant Science Series, Vol. 75. Marcel Dekker: New York. 1998. x + 680 pp. $235.00. ISBN 0-8247-0201-8.

This book is a timely compilation of current research on biopolymeric surface and interfacial phenomena. The text, comprised of 18 chapters, includes topics ranging from the basic concepts of macromolecular adsorption and surface interactions to various methods for the physical characterization of biopolymer interfaces. This book presents an excellent blend of the fundamental principles that govern interfacial properties and the critical role that these properties play in biological processes. It will become a valuable text for researchers at any level. The authors of each chapter are authorities on biopolymer interfaces who provide an international perspective on this important and developing area. Notably, this book is well organized and covers a wide range of topics in this very active field, providing key references (1722) and many useful tables and figures.

In Chapter 1, Martinus Cohen Stuart draws the connection between the thermodynamic principles that control synthetic polymers and how these principles apply to biological macromolecules and their adsorption and exchange on surfaces. The next four chapters expand upon this theme, with more specific examples of biopolymer adsorption and protein−surface interactions. This includes the basic principles of protein−surface interactions (Chapter 2, Willem Norde), methods of evaluating the thermodynamic parameters of protein adsorption from high-performance liquid chromatographic (HPLC) data (Chapter 3, Vladimir Basiuk), quantitative modeling approaches to protein−protein and protein−surface interactions (Chapter 4, Charles Roth and Abraham Lenhoff), and a discussion of how interfacial structural and chemical variation plays a key role in complex surface−protein interactions (Chapter 5, Martin Malmsten, Thomas Arnebrant, and Peter Billsten).

These discussions are followed by the introduction of spectroscopic and microscopic methods for characterizing protein−surface interactions, surface forces, kinetics of protein adsorption, and diffusion of proteins on surfaces. Chapter 6 (Krishnan Chittur) contains an excellent introduction to Fourier transform infrared spectroscopy in the attenuated total reflection scheme (FTIR-ATR), illustrating the power of this approach for protein−surface binding and diffusion studies. A brief introduction to the use of atomic force microscopy (AFM) for studies of proteins on surfaces is also included. Chapter 7 (Vladimir Hlady and Jos Buijs) adds a discussion of additional spectroscopic probes of adsorbed proteins, including total internal reflection fluorescence (TIRF) and circular dichroism (CD) studies. Examples of fluorescence studies on antibody association with specific applications to immuoassays are detailed in Chapter 8 (James Herron, Hsu-kun Wang, Vera Janatová, Jacob Durtschi, Karin Caldwell, Douglass Christensen, I-Nan Chang, and Shao-Chie Huang), which also includes strategies for the immobilization of antibodies on surfaces for such studies.

The fundamentals of surface interactions and their measurement by the surface forces apparatus (SFA) are presented in Chapter 9 (Per Claesson), including a summary of intermolecular forces and their role in compounds such as polysaccharides and glycoproteins. This leads into a description of protein adsorption kinetics in Chapter 10 (J. J. Ramsden), which contains a thorough and concise review of site binding and nucleation on surfaces, and their influence on the thermodynamics and kinetics of adsorption, desorption, and diffusion of proteins at surfaces. This meshes well with the earlier thermodynamic discussions of Chapters 1 and 2.

Further studies of molecular mobility are continued in Chapter 11 (Robert Tilton), which also introduces the fluorescence recovery after photobleaching (FRAP) technique for probing lateral diffusion at surfaces. Solution-phase protein−protein aggregation/association and surface adsorption is the subject of Chapter 12 (Tommy Nylander). Here, interactions for insulin and β-lactoglobulins are described, based on specific examples from surface force measurements. This is followed by discussions of protein exchange at surfaces in Chapter 13 (Vincent Ball, Pierre Schaaf, and J.-C. Voegel).

The influence of surfactants on protein−protein and protein−surface interactions is thoroughly discussed in Chapter 14 (Marie Wahlgren, Stefan Welin-Klinström, and Camilla A.-C. Karlsson), including a description of practical applications of controlled surfactant−protein interactions. The use of synthetic membranes for control and study of protein−membrane interactions is included in Chapter 15 (Georges Belfort and Andrew Zydney). Following this, the issue of interface design in drug delivery systems is detailed by the editor in Chapter 16 (Martin Malmsten). In Chapter 17 (Krister Holmbeg and Gerard Quash), explicit control of surface composition for use in site-specific immobilization of proteins and for enhancement of solid-phase diagnostic studies is described. Last, conformational changes associated with protein−surface interactions and their role in site-binding and enzymatic

activity are reviewed in Chapter 18 (Peter Billsten, Uno Carlsson, and Hans Elwing). This chapter introduces the reader to the use of silica nanoparticles for binding studies of a series of protein mutagens, illustrating how small deviations in protein structure influence activity. Overall, this is an outstanding guide to the field and a valuable addition to any library.

James D. Batteas, *The City University of New York—College of Staten Island and the Graduate School and University Center*

JA985765+

10.1021/ja985765+

Chemistry and Mode of Action of Crop Protection Agents. By Leonard G. Copping (LGC Consultants, Essex, UK) and H. Geoffrey Hewitt (University of Reading, UK). The Royal Society of Chemistry: Cambridge, UK. 1998. 146 pp. ISBN 0-854-04559-7.

This book provides a very comprehensive and thorough coverage of the chemistry and mode of action of herbicides, insecticides, and fungicides. The authors state that the book is designed as a general introduction to those studying agricultural science, to advisors, consultants, academics, and industrialists. The book is very easy to read, yet it provides a detailed and technical discussion of agrochemicals, including chemical structures, classes, and the modes of action. Each of the five chapters concludes with a series of questions and references, with answers to the questions provided at the back of the book.

The first chapter provides an introduction to the topic of pesticides, including history, future needs, world market, and sales. The authors also discuss the biological screening that is a necessary part of the development of new agrochemicals and describe the various phases involved in testing. This section provides a valuable insight into the process of developing new pesticides.

The second chapter provides a thorough background on the history and uses of herbicides. The authors discuss the biochemistry of photosynthesis and herbicides that affect photosynthesis. The biochemistry and mode of action of other herbicides is also presented, such as herbicides that interfere with amino acid biosynthesis, auxin-type herbicides, lipid biosynthesis inhibitors, and inhibitors of cell elongation. This chapter also discusses herbicide selectivity and resistance.

The topic of insecticides is presented in the third chapter. A discussion of the types of insecticides that have been historically used is followed by biochemical modes of action. Because insecticides have traditionally been nerve toxins, the authors present a nice discussion of insect nervous system disruption, with a table that summarizes targets, in vivo activators, and commercial insecticide classes. The authors discuss the major insecticide classes, including organophosphorus types, carbamate types, and those that interfere with neurotransmitter ligand recognition sites or ion channels. A discussion of alternative methods of pest control is also presented in this chapter, including the use of insect growth hormones, pheromones, naturally occurring compounds, living systems (baculoviruses, bacteria, entomopathogens, nematodes, predators, and parasites), and transgenic crops. The chapter concludes with a discussion of insect resistance to various insecticides.

The focus of chapter four is fungicides. An introduction provides a description of fungi, a brief history of agricultural diseases caused by fungi, and methods of treatment. The chapter includes a thorough discussion of the biochemical processes that are targets for fungicide activity, such as sterol, nucleic acid, or protein biosynthesis, and chemicals used to achieve control.

The book concludes with a discussion of plant growth regulators used to modify crop yield or quality. Discussions of plant hormones, targets for plant growth regulators, and commercial plant growth regulators are included.

This book would be a very valuable reference for researchers and practitioners in agricultural chemistry, providing both background information and detail. The references provided at the end of each chapter direct the reader to more detailed information on specific topics. The book could also be used as a textbook for courses such as chemical ecology, agricultural chemistry, biochemistry of pesticides, or ecotoxicology.

Cynthia Atterholt, *Western Carolina University*

JA985687Q

10.1021/ja985687q

World Records in Chemistry. By H.-J. Quadbeck-Seeger, R. Faust, G. Knaus, and U. Siemeling. Wiley/VCH: Wienheim, Germany. 1999. 348 pp. $44.95. ISBN 3-527-29754-7.

As is suggested by its title, this volume is not a textbook but a collection of intriguing facts and figures relating to chemists, chemistry, and their impact on the world. It is essentially the chemical equivalent of the well-known *Guiness Book of Records*. As such, it covers an impressive range of subject matter, from the largest clusters to the most toxic compounds, the most widely used plastic to the most profitable chemical company, the most frequently cited publication to the most expensive element, and just about everything in between. The "records" are either derived from chemical facts (e.g., strongest bond, most stable carbanion) or industrial figures (e.g., largest markets, production costs). The industrial segments are perhaps a bit lengthy and are often slanted toward the German perspective, the country where the book was first published.

The presentation of such a vast amount of diverse information in a readable form is a daunting task, in which the authors have generally, but not always, succeeded. Accompanying each record is a brief explanation, which is usually sufficient to place it in its proper context, and which also provides an interesting narrative, without which this book would simply be a dry listing of facts. The text is further enhanced by the inclusion of many informative diagrams, charts, and structures throughout. In many cases, the records serve to relate chemical facts and their public significance (e.g., the role of explosives in airbags is described in the chapter on "Molecular Energy"), and such an aspect might make this an interesting book for those members of the general public who have an interest in chemistry and the role it plays in their lives. Chemistry has rather poor image with this type of audience, but this book clearly illustrates the positive contributions that chemistry makes (e.g., to the economy and healthcare) and so should help counteract such negativity. New and prospective students in the chemical sciences may also find their curiosity tweaked by any one of the fascinating facts in this book. Should this be the case, numerous references (as recent as late 1998) provide ample links for further reading.

One criticism of this book is the curious arrangement of the chapters, which are organized alphabetically by title rather than by subject matter, giving the book a rather disjointed feel. Thus, the first four chapters cover "Atoms and Molecules", "Biotechnology Industry", "Catalysts", and "The Chemical Industry" in that order. Of course, the dynamic nature of chemical research dictates that the records will fall with time, and so this book is liable to date quicker than most.

While this book is not essential reading for anyone, it covers such a range of material that it surely has something for everyone. Overall, it provides an intriguing, sometimes surprising, and even fun (one section describes "Spectacular Blunders") look at the wide world of chemistry.

Kevin S. Currie, *Neurogen Corporation*

JA9957276

10.1021/ja9957276