Additions and Corrections

Progress in Inorganic Chemistry, Vol. 48. [*J. Am. Chem. Soc.* **1999**, *121*, 8970] (Book Review)

Page 8970: Kenneth K. Karlin should read Kenneth D. Karlin.

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Book Reviews

Vanadium Compounds: Chemistry, Biochemistry, and Therapeutic Applications. Edited by Alan S. Tracey and Debbie C. Crans. Oxford University Press: New York. 1998. 366 pp. $135.00. ISBN 0-8412-3589-9.

This book, part of the ACS Symposium Series (Vol. 711), was developed from a symposium entitled "Chemistry, Biochemistry and Therapeutic Applications of Vanadium Compounds" which was part of the 5th North American Chemical Congress held in Cancun, Mexico, November 10−14, 1997. The book is certainly timely given the explosive growth of this area. Indeed, to quote the editors, and this reviewer agrees, "the uses and application of vanadium compounds now outstrips the aims and aspirations of much earlier work". In keeping with the international conference that spawned it, the authorship of this book is drawn from many nations.

The book consists of 28 chapters, 12 under the heading of "Chemistry", 9 under "Biochemistry", and 7 under "Pharmacology and Therapeutics". The chapters on the chemistry of vanadium are supposed to lay the groundwork for understanding the more biochemical aspects of the later chapters. The editors, who are also the authors of Chapter 1, do a particularly good job in this regard and actually refer the reader to relevant sections later in the book. They also point out that, in contrast to the situation 10 years ago, our knowledge of V(V) now far exceeds that of the other oxidation states, due at least in part to the power of modern NMR methods. Other chapters cover speciation of vanadium complexes by potentiometry/NMR, vanadium thiolates (a relatively new area), peroxo vanadium species (an old area with new relevance), and models for various vanadoproteins. The second section, on "Biochemistry", begins with a useful overview by Kustin before going on to chapters covering the vanadium haloperoxidases, nitrogenases, and vanadium accumulators (such as the tunicates and the mushroom *A. muscaria*) all by acknowledged experts in their respective fields. After two chapters on pharmacology and toxicology which are refreshingly up to date, chapters on insulin mimetic vanadium compounds dominate the final section. This is perhaps not surprising, given the enormous potential impact of an oral insulin replacement. In the Sigel and Sigel monograph just three years earlier, there was only one chapter on insulin mimetic complexes, while the present volume has at least seven chapters in which this topic is discussed at length.

Overall, this is a very useful book, providing one-volume access to much of the relevant recent literature. The only negatives are, as is common for multi-author works such as this, some unavoidable duplication and the fact that some topics (most notably the interaction of vanadium complexes with DNA and their potential anticancer activity) were not covered at all. The relatively high price will probably limit its purchase to libraries and active vanadium researchers, but it would be an excellent source for the novice interested in the area to consult first.

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Electrochemical Nanotechnology: In-Situ Local Probe Techniques at Electrochemical Interfaces. Edited by Dr. Wolfgang J. Lorenz (Universitat Karlsruhe) and Dr. Waldfried Plieth (Universitat Dresden). Wiley-VCH: Weinheim, New York, Chichester, Brisbane, Singapore, Toronto. 1998. xii + 324 pp. $131.95. ISBN 3-527-29520-8.

In this IUPAC monograph, many of the recent advances in the use of local probe techniques, such as scanning tunneling microscopy (STM), atomic force microscopy (AFM), and related methods of surface analysis, are addressed from an electrochemical perspective. The editors have defined contributions to electrochemical nanotechnology as belonging to either *analytical aspects*, involving the characterization of thermodynamic, structural, and dynamic properties of surfaces and interfaces as well as the reactions which occur there, or *preparative aspects*, involving the use of the probe tip to form defined nanoobjects (molecular or atomic clusters, quantum dots, etc.) or to modify surfaces with nanometer-scale resolution. In all aspects of the described work, the critical role of electrochemistry is stressed as a method to control the Fermi levels of substrate and tip as well as to control both Faradaic and non-Faradaic induced modifications of the surface. As the authors suggest, this represents a distinct advantage over UHV or gas environmental conditions.

This monograph is targeted to a diverse audience with the goal of exposing the diverse fields involved in nanotechnology (surface chemistry, physics, materials science, electronics, sensor technology, biology, medicine, etc.) to the electrochemical aspects of current research in this area. In this regard, the contents are categorized into eight subsections: General Aspects, Roughness and Interface Structure, Surface Modification, Nucleation and Electrodeposition, Oxide Layers and Corrosion, Semiconductors, and STM & Complementary Methods.

The monograph successfully presents a fairly comprehensive description of the current state of the knowledge in the field of electrochemical nanotechnology. The authors consist of a diverse collection of international experts who have shaped this field from its infancy. The references are well balanced, including both historical work and current work, taking place in the early to mid 1990s. In addition, many of the authors have included recent results that have yet to be published. This monograph will prove to be of value to both new entrants to the nanotechnology arena and current researchers desiring a broad and current description of the impact of electrochemistry on the field of nanotechnology.

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