Encyclopedia of Electrochemistry, Volume 7a: Inorganic Electrochemistry. Edited by Fritz Scholz (Universität Greifswald, Germany) and Christopher J. Pickett (John Innes Centre, Norwich, UK). Series Edited by Allen J. Bard and Martin Stratmann. Wiley-VCH Verlag GmbH & Co. KGaA: Weinheim. 2006. x + 564 pp. $320. ISBN 3-527-30399-5.

This volume brings a refreshing dose of inorganic chemical thinking to the discipline of electrochemistry. There is no hope of covering all the details of inorganic electrochemistry in a limited set of volumes. However, in this initial volume, the authors set the tone by dedicating the first three chapters to the consideration of redox potentials from three different points of view: rigorous thermodynamics, including a very up-to-date tabulation of standard and formal redox potentials; practical electroanalytical chemistry; and inorganic structure−bonding relationships. This approach provides a unique and very comfortable introduction to modern electrochemistry for the physical−inorganic chemist. This introduction could also be used to provide an excellent basis at the advanced undergraduate or introductory graduate level to key physical issues in inorganic chemistry. That is, there is a textbook "feel" to this foundationally strong section of the volume.

The three-chapter introduction is followed by element-specific chapters that start at hydrogen and "march" in a scattered manner across the periodic table, hitting the alkali metals, important post-transition elements, and key metals in the d-block section of the table. Because these chapters are written by different authors, their style and completeness are variable. In general, they focus on the redox and electrochemistry of molecular species, leaving a large gap in the area of solid-state electrochemistry. However, there are notable exceptions, namely the chapter on silicon, which attempts to give a general introduction to semiconducting electrodes, and the chapter on the platinum group metals in which the electrochemistry of soluble complexes and the surface chemistry of these key electrode materials are nicely discussed.

Of some concern is the unevenness of the element-specific chapters. In some cases, they provide a thorough description of the electrochemistry of the species of interest, covering both classic inorganic compounds and organometallics. In the best chapters, the chapter on oxygen being a premier example, the chemistry described starts with an outline of the structure and bonding of key molecular species and then flows into the electrochemical implications. One strength of this volume is that the electrochemical discussions often include practical electroanalytical experiments and data. For example, one is not simply given a redox potential: rather the cyclic voltammetric experiment that gave rise to that value is also described, and the voltammograms are reproduced. In other instances, however, the chapters do not live up to the promise of their title or simply give "lip service" to the topic by providing a couple of pages on the subject. Consider the chapter "The Iron Group". If one is specifically interested in the chemistry and electrochemistry of organometallic iron complexes, this is an excellent resource. However, if one is hoping to learn about ruthenium complexes, there is very limited material. Likewise, the chapters on hydrogen and hydrides and on silicon—key topics in the study of alternate energy—are unfortunately incomplete in terms of both descriptive text and references. Similar concerns could be voiced about some of the other element-specific chapters.

Overall, this volume will be useful for those who seek a strong introduction to the application of electrochemistry to inorganic systems. It will be particularly appealing to those with an interest in inorganic structure and bonding. Its use of actual electrochemical data as opposed to chemical and thermodynamic conclusions based on electroanalytical results will be satisfying to those who appreciate the intricacies of physical electrochemistry and the pitfalls of interpreting data, as well as to those who are interested in applying, for the first time, electroanalytical approaches to the understanding of inorganic chemistry.

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Carbon-Rich Compounds: From Molecules to Materials. Edited by Michael M. Haley (University of Oregon) and Rik R. Tykwinski (University of Alberta). Wiley-VCH Verlag GmbH & Co. KGaA: Weinheim. 2006. xx + 644 pp. $190.00. ISBN 3-527-31224-2.

Research on carbon-rich compounds has undergone explosive growth since the discovery of the fullerenes in 1985. This book offers an overview of the advances associated with such compounds, the notion of which, as stated in the forward, "resists definition". Each author has presented a well-written chapter that is, for the most part, well referenced. The quality of the book is greatly enhanced by the fact that the authors chosen to contribute are excellent practitioners of the fields covered here. Nevertheless, the diversity of coverage from chapter to chapter is so great that each chapter must be reviewed individually.

The introductory chapter of the book, coauthored by one of the editors, provides an overview of the seminal contributions of pioneers in the field. The brief discussion on carcinogenic hydrocarbons could have been improved if the pioneering work of Jerina on the metabolites of carcinogenic polycyclic aromatic hydrocarbons (PAHs) had been included. Chapter 2, entitled "Electronic Conduction in Photoactive Metallo-wires", is related to carbon-rich compounds in the sense that organometallic complexes are built around ethynylated aromatic ligands and is very well referenced.

The following chapter is an excellent contribution that covers all-benzenoid PAHs, including the synthesis of very large aromatic systems (graphenes). It offers the reader a valuable introduction to this rapidly expanding field. A detailed chapter on the [N]phenylenes including synthesis, chemistry, and structural properties follows. Experimental procedures are presented at the end of this and other chapters.

Chapter 5 is a description of how diacetylenes can be polymerized in the solid state as the result of topological

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polymerization. Topological polymerizations of several diacetylenes that avoid the more favorable solution-phase 1,2-polymerizations are discussed. An exhaustive account, also coauthored by one of the editors, of chiral carbon-rich macromolecules and cyclophanes is presented in the next chapter, followed by a discussion of the salient aspects of carbon-rich cycles containing 1,3-butadiyne units by Gleiter and Werz.

The current status of computational chemistry as applied to carbon-rich structures including alkynes, polyynes, and polyadamantanes is discussed in Chapter 8, followed by a chapter by Kitagawa et al. on fullerene cations and open-cage fullerenes. The latter chapter is well referenced, and the coverage is exhaustive; these are areas that have been pioneered by the authors. This chapter also contains a cursory description of how carbon nanotubes might be functionalized.

Chapter 10 covers all aspects of the synthesis and properties of metal alkynyls. This is followed by a chapter that focuses on carbon-rich conjugated oligomers of defined length. The penultimate chapter addresses the synthesis and chemistry of nonplanar polycyclic aromatic hydrocarbons, a subclass of PAH that has become known as fullerene fragments or buckybowls. Detailed synthetic procedures are presented, and the chapter concludes with an up-to-date account of transition metal complexes of these materials, including 380 references. In the final chapter, reduction processes of carbon-rich compounds are described. The formation of anions and radical anions of fullerenes, cyclophanes, and nonplanar polycyclic aromatic compounds is covered.

Collectively, the chapters provide lucid coverage of a large body of work as well as point the way for work that is still evolving in this field. Each chapter is superbly written and contains a vast collection of references, many as recent as 2005. Although the absence of a chapter focused entirely on functionalized carbon nanotubes is puzzling, the book fulfills the editors' desire to offer the reader a cross-section of the area. *Carbon-Rich Compounds* will be an excellent resource for researchers working in these areas.

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Organic Reactions, Volume 67. Editor-in-Chief: Larry E. Overman (University of California, Irvine). John Wiley & Sons, Inc.: Hoboken, NJ. 2006. viii + 686 pp. $125. ISBN 0-470-04145-5.

There are two chapters in this volume of *Organic Reactions:* "Catalytic Enantioselective Aldol Addition Reactions" by Carreira, Fettes, and Marti and "Benzylic Activation and Stereochemical Control in Reactions of Tricarbonyl(Arene)Chromium Complexes" by Uemura. The book concludes with a list of cumulative chapter titles by volume, an author index for Volumes 1−67, and a chapter and topic index for Volumes 1−67.

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