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BOOK REVIEWS

Modern Surface Organometallic Chemistry. Edited by Jean-Marie Basset (Laboratory of Surface Organometallic Chemistry, CNRS-CPE, Lyon, France), Rinaldo Psaro (CNR Institute of Molecular Science and Technologies, Milan, Italy), Dominique Roberto and Renato Ugo (University of Milan, Italy). WILEY-VCH Verlag GmbH & Co. KGaA: Weinheim.2009. xxviii + 698 pp. $360. ISBN 978-3-527-31972-5.

To the nonpractitioner in the field of heterogeneous catalysis, the subject "surface organometallic chemistry" or "surface coordination chemistry" appears unambiguous: it pertains to the study of the chemical processes that transpire exclusively at the catalyst−solution or catalyst−gas interface. To the active researcher, however, it would be necessary to specify the particular emphasis of the topic. There are two aspects: one involves the direct interaction of the reactant with the catalyst surface and is of primary interest in catalysis with pure metals; the other is focused on the reactivity brought about by homogeneous catalysts immobilized at the surface. It is the latter that is the focus of this book, *Modern Surface Organometallic Chemistry*.

The view that heterogeneous reactant−metal (adsorbate−substrate) interactions can be modeled after homogeneous coordination and organometallic chemistry, in which the surface is treated as the metal center and the adsorbate as the ligand, was first articulated by Muetterties (see Muetterties, E. L. *Bull. Soc. Chim. Belg.* **1975**, *84*, 959 and Muetterties, E. L. *Bull. Soc. Chim. Belg.* **1976**, *85*, 451). Also alluded to as the "surface-cluster analogy", such insight has been espoused in several theoretical and experimental investigations (see Muetterties, E. L. et al. *Chem. Rev.* **1979**, *79*, 91; Hoffman, R. *Solids and Surfaces. A Chemist's View of Bonding in Extended Structures*; VCH: New York, 1988; Friend, C. M.; Muetterties, E. L. *J. Am. Chem.* Soc. **1981**, *103*, 773; Albert, M. R.; Yates, J. T. *The Surface Scientist's Guide to Organometallic Chemistry*; American Chemical Society: Washington, DC, 1987; and Soriaga, M. P. *Chem. Rev.* **1990**, *90*, 771). It is now widely accepted that adsorbate−substrate chemistry qualitatively bears strong resemblance to metal−ligand reactivity. However, detailed quantitative correlations have proven to be elusive. Further research on this particular issue has abated as a consequence.

Research on the other facet of surface organometallic chemistry, which may also be regarded as catalysis by chemically modified surfaces, continues to be actively pursued, especially given the heightened interest in surface-immobilized enzyme-based model complexes. The interfacial catalysts are much more tractable to a thorough characterization since the complexes are not directly bonded but only tethered to the surface: that is, the active sites of the catalysts that reside in the unadsorbed complex are expected to behave not too differently from nonsurface-attached solution species.

This comprehensive book is edited by four eminent scientists, two of whom have helped pioneer the research area. Fifty investigators have contributed to the impressive array of 16 chapters, the breadth and depth of which render an encyclopedic flavor to the volume. The book is organized into two parts. The first section is a treatise on the fundamental aspects that include characterization methods, metal−cluster analogues, molecular models, and solid-support influences. The second part is devoted to applications to catalysis, organometallic synthesis, and hybrid materials. The book is skillfully aided by the first chapter, penned by the pioneers, which traces the origins and development of surface organometallic chemistry and serves as a guide for the uninitiated to the nuances of the field.

Modern Surface Organometallic Chemistry is an excellent compendium that should be of substantial utility not only to the research beginner but also to the casual reader or the accomplished investigator.

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Tomorrow's Chemistry Today: Concepts in Nanoscience, Organic Materials and Environmental Chemistry, 2nd ed. Edited by Bruno Pignataro (University of Palermo, Italy). WILEY-VCH Verlag GmbH & Co. KGaA: Weinheim. 2009. xxvi + 430 pp. $145. ISBN 978-3-527-32623-5.

The idea for this book grew out of the European Young Chemists Award that was held during the First European Chemistry Congress in Budapest, Hungary in August 2006. Here approximately 120 chemists, all under the age of 34, gathered from throughout the world to present their latest research and ideas. Based on this meeting, the editor invited a selection of these young chemists to write a chapter on their research, results, and outlook about the future. There are 17 chapters divided into the following three subject areas: "Self-Organization, Nanoscience and Nanotechnology"; "Organic Synthesis, Catalysis and Materials"; and "Health, Food, and Environment". A sampling of the chapters from each of these areas includes "Nanostructured Porous Materials: Building Matter from the Bottom Up" by García-Martínez; "Selective Oxido-Reductive Processes by Nucleophilic Radical Addition under Mild Conditions" by Gambarotti and Punta; and "Photochemical Transformation Processes of Environmental Significance" by Vione. A subject index completes the book.

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