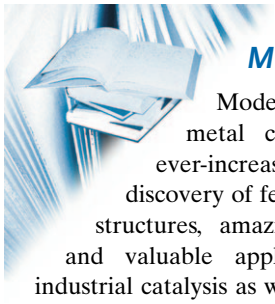

Organotransition Metal Chemistry

Modern organotransition metal chemistry has attracted ever-increasing interest since the discovery of ferrocene in 1951. Unique structures, amazing reactive properties, and valuable applications in large-scale industrial catalysis as well as in the synthesis of fine chemicals have attracted organic, inorganic, and theoretical chemists.

Professor John F. Hartwig, well known for his studies of amination and C–H activation reactions, together with 23 renowned organotransition metal chemists, recently released the first edition of *Organotransition Metal Chemistry—From Bonding to Catalysis*. This book is the semi-official successor of *Principles and Applications of Organotransition Metal Chemistry* by J. P. Collman, L. S. Hegedus, J. R. Norton, and C. R. Finke. The second and last revision of this classic textbook dates back to 1987. Thus, it was high time to present the progress in the field during the past two decades.

Hartwig's book serves as an effective and well-balanced bridge to connect the "inorganic" world of transition metal complexes with the "organic" world of functional group transformations. The first part consists of 13 chapters in which the principles of structure and bonding, the classification of ligands, and fundamental reaction mechanisms are discussed. The 14th and central chapter by Prof. P. J. Walsh explains the principles of catalysis, thereby skillfully splicing together the first and second part of the book. Selected catalytic applications of organotransition metal complexes are then presented. The eight detailed chapters about hydrogenation, olefin functionalization, carbonylation, C–H functionalization, coupling reactions, allylic substitution, olefin metathesis, and olefin polymerization give an impression of encyclopedic completeness. There are over 7000 references to publications extending up to 2008, although the coverage of 2007 and 2008 is significantly thinner. Nevertheless, a vast amount of literature on organotransition metal chemistry has accumulated in recent years. Thus, even a work of "kilopage" size has to tackle the challenge of selection. As a consequence, there is only a small amount of information on spectroscopic methods and bioinorganic chemistry. Some other topics of catalytic transformations, such as homogeneous catalysis by gold compounds, organoazide–alkyne coupling, cuprate additions, cyclopropanation of alkenes, and alkyne trimerization might be worth adding or extending in a second edition.

The authors of the chapters seem to have heeded the comment by the American journalist Dan Rather: "*To err is human, but to really foul up requires a computer.*" The risk that the book might suffer from such effects has been reduced insofar as only a few conclusions from ab initio or DFT model studies have found their way into the text. However, as a negative consequence of that, mechanistic controversies at the forefront of research have been omitted in some cases, and proposed mechanisms have sometimes been oversimplified. For example, the role of α-, β-, and γ-agostic interactions has been omitted from the chapter on zirconocene-catalyzed olefin polymerization. A discussion of computational studies would have offered the opportunity to reach beyond topology, leading to a deeper electronic understanding of all elementary steps in the catalytic cycle.

The contributors originate mainly from North America, and readers in Europe and Asia are more likely to wish for a wider range of topics and literature citations than are those in the USA. For example, a mention of the first artificial asymmetric transition-metal-catalyzed reaction by H. Nozaki and the 2001 Nobel Prize laureate R. Noyori[1] would have provided useful additional background to the history and to the progress achieved in the last few decades.

The black-and-white layout is clear and modern in style. The numerous structure drawings, schemes, diagrams, tables, and figures give an attractive impression. As a first edition, the book does not suffer from any significant editorial teething problems. The editor and authors have done an excellent job of proofreading the text. The one-page abbreviated contents section, an 18-page table of contents, and a detailed index make it easy to find a topic of interest.

For research chemists and lecturers in this field, *Organotransition Metal Chemistry—From Bonding to Catalysis* is an essential piece of equipment, both as a reference source and for inspiration. The target readership for this book also includes graduate students who wish to delve deeply into the field of transition metal catalysis. In summary, this first edition is already a classic. A more comprehensive selection of catalytic reactions in a second edition would upgrade the book to make it an outstanding must-have for every organometallic chemist.

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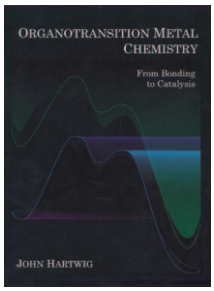

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[1] H. Nozaki, S. Moriuti, H. Takaya, R. Noyori, *Tetrahedron Lett.* **1966**, 5239.