

Book reviews

Metal–Ligand Interactions—Structure and Reactivity

N. Russo and D. R. Salahub (eds)

Kluwer Academic, Dordrecht, 1995.

xiv + 552 pages. UK price: £169, hardback.

ISBN 0-7923-3833-2

This book appears as Volume 474 in the NATO ASI Series C: Mathematical and Physical Sciences, and comprises 18 of the main lectures given at the NATO ASI on the title subject matter in Cetraro, Italy, in September 1994. It is a pity that, with modern publishing methods, such a book of conference proceedings in a rapidly advancing and topical field could not be brought to publication more rapidly. The book contains a very healthy mixture of synthetic and computational (mainly density functional theory) chemistry, together with the results of a wide range of physical studies. It also contains a list of the participants at the conference, and an Index which seems to have been compiled somewhat haphazardly, and which will probably be less useful than the Table of Contents at the front of the book.

The areas particularly well represented in the book are the synthesis and characterization of inorganic complexes and their use in catalysis, clusters and the structure and reactivity of metal surfaces. Also there is one chapter devoted to a theoretical study of the modelling of ligand–metal interactions in metalloenzymes. The availability in recent years of computational methods capable of being applied to transition-metal complexes and clusters has meant that synthetic and physical studies can now be complemented by a variety of calculations, density functional theory, semi-empirical and *ab initio* methods. The results of many such calculations are described in the book and are discussed alongside the physical measurements with which they can be compared. These aspects give the book a balanced feel and make it very instructive. The metals considered in the book are mainly transition elements but *p*-block metals are included in several chapters.

The book overall is much better than the average volume of conference proceedings. It is very well produced, all of the contributions have clear diagrams and readable text, and with the chapters at an average of nearly 30 pages in length, the authors have been given ample space in which to describe their subject. The individual chapters are also all well referenced, many having over 50 and several having over 100 references, many more than are often found in such articles. These features all go to make the volume, much more worthwhile than many of this type, and most of the contributions are useful additions to the literature, being readable reviews of chemistry by experts in the field. The topicality and the excellence of the content should mean that the book will be of interest to a wide range of readers of this journal,

although strictly speaking many of the compounds described are not organometallic but are inorganic complexes or clusters. The book should certainly be in libraries used by inorganic chemists interested in both practical and theoretical aspects of metal–ligand interactions.

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Concise Inorganic Chemistry

J. D. Lee

5th edn, Chapman and Hall, London, 1997

1072 pages. £24.99

ISBN 412 788–209

This is the fifth edition of the well-known undergraduate text, and it will be understood that the work is not strongly directed towards organometallic chemistry specifically, or even extensively. It is therefore reviewed with the author's intentions in mind. Clearly, in the first two years of a specialist chemistry course, or in the totality of a joint or similar programme, not a lot of organometallic chemistry will be needed (enthusiasts excepted). This work, in my view provides about the right amount of organometallic chemistry for the first two years of a standard UK chemistry course. The arrangement of the work is via the Periodic Table, and a broad range of organometallic chemistry is contained within the chapters dedicated to the Groups. The book aims towards a practical, industrial orientation, and in this context the Wacker process, Ziegler polymerization, hydroboration, vitamin B₁₂ and environmental mercury are covered, but not in great detail. Hydroformylation, hydrocyanation, hydrogenation with rhodium or ruthenium, alkene polymerization with chromium catalysts, the L-Dopa and similar asymmetric processes are not. This is not a textbook of organometallic chemistry, but the student using it will form an impression of the role and potential of the organometallic field and may, in his or her final year, move on to more specialized texts. As a standard text, the work is affordable; it is economically produced with basic artwork and no colour. It is worthwhile for most students, but I would recommend enthusiasts to spend a little more and acquire a text that will last the whole of the course, and perhaps beyond.

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