

### Book review

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*Mechanisms of Inorganic and Organometallic Reactions, Vol. 4*; edited by M.V. Twigg, Plenum Press, New York, 1986, xviii + 536 pages, US \$79.95, ISBN 0-306-42332-4.

This series provides a continuing review of the literature describing mechanistic aspects of inorganic and organometallic chemistry, and the current volume covers mainly material published between January 1984 and June 1985. As the editor notes, the number of papers to be considered has increased considerably, and it is greatly to his credit that he has succeeded in keeping both the size and price of the volume within reasonable bounds. The most obvious omission on comparison with earlier volumes is the author index; whilst it is entertaining to check whether one's own and one's colleagues' and friends' papers have been cited, I cannot feel this to be a serious loss.

The plan of the book broadly follows that of previous volumes, with the intention that the reader should be able to follow the progress of different fields over a period of time. The first section deals with electron transfer reactions, considering in successive chapters general and theoretical aspects, redox reactions between two metal complexes and metal–ligand redox reactions. The second section considers substitution and related reactions with chapters detailing reactions of compounds of nonmetallic elements and of labile metal complexes. The remaining four chapters deal with substitution reactions of inert-metal complexes, subdivided according to coordination numbers, with individual accounts of the chemistry of cobalt and chromium complexes.

It is, however, to Section 3 that organometallic chemists will be most attracted. Chapter 10 details substitution and insertion reactions, the reactions of carbon monoxide complexes being predictably prominent in both areas. The section on metal–alkyl bond formation and fission begins with a selection of highlights, including dihydrogen complexes, CH activation and agostic bonds, and reactions at bimetallic complexes. Unfortunately, this promising start is succeeded by a rather less exciting systematic account of reactions classified by element. A similar systematic approach (this time by ligand) is used in Chapter 12 detailing the reactivity of coordinated hydrocarbons. Chapter 13 considers rearrangements, intramolecular exchanges and isomerisations of organometallic compounds. This is a particularly well illustrated chapter and a rather “better read” than most of the book. Chapter 14 discusses catalytic reactions; it is densely written, reflecting the very considerable research activity in this area. The final section of the book is a compilation of numerical data, in this volume being comprised exclusively of volumes of activation for inorganic and organometallic reactions.

The editor of this volume persists with the irritating habit (which I have noted in this author's collaborations with Plenum in the past) of collecting references at the

end of the book. Whilst it is not always practical to put references as page footnotes, it is much the most useful approach from the point of view of the reader. There seems no practical objection to keeping them at least at the end of the relevant chapter. The book is well-produced, with few errors and generally good (though sometimes a little small) diagrams, and a useful index. This is undoubtedly an important volume and one which all chemical libraries should buy. However, it is definitely a book to refer to rather than one to peruse by the fireside on a winter evening.

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