Journal of Organometallic Chemistry, 381 (1990) C60–C63
Elsevier Sequoia S.A., Lausanne – Printed in The Netherlands

Book reviews

Modern Synthetic Methods, 1989; edited R. Scheffold, Springer-Verlag, 1989, 304 pages, DM78 (soft cover), ISBN 3-540-51060-5.

This paperback volume is the conference documentation of the fifth Seminar on Modern Synthetic Methods, held in Interlaken in 1989. In fact it does not contain accounts of specific lectures, but overviews of the topics discussed at the conference, written by acknowledged experts in these fields.

The first section, by David H.G. Crout and Markus Christen, reviews Biotransformations in Organic Synthesis. The range of syntheses, particularly asymmetric syntheses, which can be accomplished using enzymes has increased greatly in recent years. Organometallic chemists may be a little surprised to realise that pig liver esterase is a sufficiently tolerant enzyme to give useful enantioselectivity in the hydrolysis of an ester containing a diene iron tricarbonyl unit. The chapter is written in a clear and lively style, and here, as elsewhere in the book, there are illustrative experimental procedures.

In Chapter 2 R. Noyori and M. Kitamura give an overview of enantioselective catalysis by metal complexes. This begins with an account of asymmetric hydrogenation, an area recently rejuvenated by the introduction of the author's own catalysts based on the ruthenium BINAP systems. Hydrosilylation and borane reduction of ketones are briefly discussed, before a more substantial account of oxidation. The key reactions here are the epoxidation of allyl alcohols and vicinal hydroxylation of alkenes. The section on carbon–carbon bond forming reactions covers a very wide area, including cyclopropanation, hydroformylation and hydrocarboxylation, allylic alkylation and the coupling of organometallics with organic halides. The last three reaction types considered in this section have a more organic flavour, the alkylation of carbonyl compounds, aldol reactions and Michael addition reactions. Further sections detail alkene isomerisation, and catalysis by chiral Lewis Acids. This is an extremely useful account, ranging from the mature areas of the subject, where the reaction mechanism is well-established, to the more novel reactions in which the role of the metal catalyst is, as yet, poorly understood.

Enantioselective catalysis using chiral cobalt and copper complexes is reviewed by Andreas Pfaltz. The enantioselective cyclopropanation of alkenes by diazo compounds is considered in detail, as are reactions catalysed by B_{12}- and (semicorrinato)cobalt. Probably the most important of these is the reduction of α,β-unsaturated carbonyl compounds. The final chapter, by John M. Thomas and Charis R. Theocharis, details the uses of clays, zeolites and other microporous solids for organic synthesis.

All of the reviews in this volume are of high quality, and are written by experts in their fields. The production is from camera ready manuscripts, but both text and

diagrams are of a high standard. There is no index, but each of the chapters does have a detailed contents list, so that material of interest is not difficult to find. By modern standards of volumes of reviews the price is relatively modest, and individuals working in the field of asymmetric synthesis should seriously consider buying a copy. The soft-cover format may present a problem for libraries, in which the book is likely to be heavily used, and they will probably have to consider strengthening the binding.

School of Chemistry and Molecular Sciences,
University of Sussex, Brighton (U.K.)

Penny A. Chaloner

Inorganic Syntheses, Volume 25, Editor-in-Chief Harry R. Allcock, Wiley-Interscience, 1989, xxi + 300 pages, £31.40, ISBN 0-741-61874-8.

The purpose of the Inorganic Syntheses series is to provide reliable, and preferably foolproof, syntheses of inorganic compounds. That a research worker cannot reproduce these syntheses is rightly regarded as a serious indictment of their competence. Moreover, it is intended that the syntheses chosen for inclusion should be of general interest. This is a series which is bought generally by libraries, rather than individuals; it is likely that few individuals would find all the sections of the book of equal interest.

The first chapter deals with the preparation of main group ring systems and related compounds, mainly considering rings containing phosphorus, nitrogen and/or sulphur. The next section deals with inorganic polymer systems, usually with nitrogen phosphorus backbones. The growing importance of inorganic chemistry in pharmacology is highlighted in Chapter 3 with sections on boron analogues of amino acids, aziridinyl substituted cyclophosphazenes, and platinum pyridone blue.

Chapter 4 is the most general in the volume, and deals mainly with coordination compounds, and some main group organometallics. Whilst a few σ-aryl complexes of platinum are included here, it is chapter 5 which contains most of the syntheses of transition metal organometallic compounds. The range of compounds considered is extensive, including substituted iron carbonyls, cyclopentadienyl derivatives of cobalt and rhodium, phosphido bridged complexes, cyclopentadienyldiruthenium complexes, and mixed osmium clusters, The volume is completed by contributor and subject indexes for Volumes 21–25.

As always with this series, the volume is well-presented, and clearly referenced. There is the usual scrupulous attention to the details of the preparations which has so assisted all users, from novice graduate students to experienced research workers. All serious chemistry libraries should continue to purchase this important series.

School of Chemistry and Molecular Sciences,
University of Sussex, Brighton (U.K.)

Penny A. Chaloner