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Book reviews

Advances in Metal-Organic Chemistry, Volume 1; edited by Lanny S. Liebeskind, Jai Press, London, xi + 393 pages, £55. ISBN 0-89232-863-0.

This is the first of a new series, which it is intended shall appear annually. It consists of reviews, by acknowledged experts in their fields, of the uses of organometallic chemistry in organic synthesis. In this respect it differs considerably from the well-established series *Advances in Organometallic Chemistry*. Whilst the reviews here did deal with the underlying principles of the organometallic chemistry which they were using, the focus is very much on the use, and the perspective is considerably more "synthetic organic" in character.

The editor has lined up an impressive array of authors for this first volume. The first section, by Anthony J. Pearson, reviews recent developments in the synthetic applications of organoiron and organomolybdenum chemistry. His own distinguished work in this field is strongly represented. The one unfortunate feature of the chapter is the diagrams, which have been produced on a computer, and have an unfortunately fuzzy appearance. This is followed by a review of recent developments in the area of transition metal catalysed carbonylations by Iwao Ojima. The reactions of fluoroalkenes and fluorinated alkenyl bromides are highlighted, with particular reference to approaches to amino acid and heterocycle synthesis.

Arelette Solladié-Cavallo reviews her recent work on the use of chiral arene chromiumtricarbonyl complexes in asymmetric synthesis; this has proved particularly useful in that both enantiomers of the complexes of substituted benzaldehydes can be readily obtained. Jan-E. Bäckvall reviews metal-catalysed additions to conjugated dienes. Whilst palladium chemistry dominates the discussion, there is also good coverage of reactions involving other transition metals, and non-transition elements. Ei-ichi Negishi gives a good account of metal-organic approaches to the stereoselective synthesis of exocyclic alkenes; some more mechanistic discussion would have helped me in following the finer points of the transformations.

The final, and much the longest, section of the book is a review of transition metal carbene complexes in organic synthesis by William D. Wulff. This covers an extremely wide area, mostly the work of the author's own research group. Annulation and cycloaddition reactions are preeminent, and this will be a truly valuable source to anyone working in this area.

The standard of production of the volume is generally good, though I did find a number of typographic errors. The text is typeset, but the diagrams have been produced directly from those supplied by the authors. Most of these are of high standard. However, many of them have been reduced in size to the point where clarity is lost, with much of the lettering less than half the size of that in the main text. Even readers with 20:20 vision will find Scheme 17 on page 231 to be something of a strain. A little more attention to layout, and a little extra space allocated to figures, would have been most welcome. All the chapters are well-refer-

enced, most to 1987. There is no index, but most chapters have detailed lists of contents to enable the reader to find the desired item.

The main failing of the book seems to be in the lack of editorial direction. This results in a wide disparity between the authors' views on the nature of the task in hand. Thus the chapters range between reports which deal almost exclusively with the author's own work (Wulff, Ojima) and more general reviews in which the author's work features as a more or less important part (Bäckvall, Pearson). Both approaches are legitimate, but perhaps the editor should decide which he wants. Also there is considerable disparity in the density of the descriptions of experimental procedures which are inserted into the text, ranging from generous (Pearson) to non-existent (Wulff). I found these useful, but again a more consistent approach would have been helpful.

The individual contributions to this volume are, without exception, very good. The price is modest by modern standards, and it will be a valuable addition to both libraries and individual bookshelves.

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Organic Functional Group Preparations, Volume 12-III, second edition; by Stanley R. Sandler and Wolf Karo, Academic Press, New York, 1989, xiv + 552 pages, \$99. ISBN 0-12-618601-4.

The purpose of this series is to provide the organic chemist with an up-to-date compendium of published synthetic methods, directed specifically towards the preparations of particular classes of organic compound. For this second edition the literature has been reviewed from 1971 up to 1987, and the new material incorporated.

In this particular volume routes to thirteen classes of organic compound are detailed, viz, acetals and ketals, anhydrides, monoalkyl sulfates, sulfenic acids and sulfenic acid derivatives, isonitriles, amidines, imides, imidates, nitrones, hydroxylamines and substituted hydroxylamines, oximes, hydroxamic acids, and thiohydroxamic acids. Of all the sections, that on isonitriles is probably of the most direct interest to organometallic chemists. As one might expect, discussions of routes involving condensation and elimination reactions occupy most of the space. The layout is attractive and systematic, and there are lengthy tables of results and compounds made, both here and elsewhere in the book. There are also clear descriptions of selected experimental procedures, with careful attention being paid to the hazards involved in the experiment under consideration. The most disappointing feature of the account is that out of more than 150 references there are only 8 from the 1980s and 22 from the 1970s. Whilst these proportions may be somewhat better in other chapters, they are by no means atypical.

There are numerous examples of the uses of organometallic reagents in the preparations of these classes of compounds, and it is perhaps pertinent to note that metallated derivatives of imides and isonitriles have themselves proved to be useful synthetic intermediates. Reactions of organometallic nucleophiles with oximes and