

Book Reviews

Ylides and Imines of Phosphorus

A.W. Johnson (with special contributions from W.C. Kaska, K.A.O. Starzewski, and D.A. Dixon), Wiley Interscience, pp. 583, £74
ISBN 0-471-52217-1 (Alk. paper)

The senior author published an important monograph on ylide chemistry in 1966, which was comprehensive and covered the literature with 840 citations. The present volume is, in one sense, its successor, but it centres exclusively on the ylides and imines of phosphorus. The field has obviously grown very substantially, this more limited scope being covered in 587 pages with over 3000 references. Moreover, as Professor Johnson points out, this time the coverage is selective rather than complete, although an effort has been made to be "encyclopedic" without necessarily citing all examples of every reaction.

Professor Johnson is the author of all but two chapters. There is a useful one (Chapter 2) on theoretical aspects by D.A. Dixon, while another (Chapter 14, by W.C. Kaska and K.A.O. Starzewski) deals comprehensively and effectively with transition metal complexes of ylides. The latter topic is covered in 73 pages and cites 239 references. It is, of course, this chapter which will be of particular interest to many readers of this Journal because it is devoted to the formation, structures and reactions of compounds having transition metal to carbon bonds. It contains sections dealing with (a) Ti, Zr, Hf (8 pages); (b) V, Nb, and Ta ($2\frac{1}{2}$ pages); Cr, Mo and W (12 pages); Mn and Re (6 pages); Fe, Ru, Os (9 pages); Co, Rh, and Ir (4 pages); Ni, Pd, and Pt (11 pages); Cu, Ag and Au (6 pages); and the f-metals (7 pages).

The titles of the remaining chapters together with (in parentheses) the number of pages and references, respectively are as follows: Introduction to Ylides and Imines (8, 41); Introduction to Phosphonium Ylides (43, 432); Preparation of Phosphonium Ylides (20, 228); Reactions of Phosphonium Ylides I. Cleavages and Decompositions (19, 105); Reactions of Phosphonium Ylides II. With Electrophilic Reagents (33, 214); Reactions of Phosphonium Ylides III. With Multiple-Bonded Compounds and Three-Membered Rings (23, 135); The Wittig Reaction I. Scope and Applications (41, 354); The Wittig Reaction II. Mechanism and Stereochemistry (26, 100); Phosphonate Carbanions (Phosphono Ylides) (39, 390); Phosphinoxy Car-

banions (Phosphono Ylides) (19, 128); Other Phosphorus Ylides/Carbanions (15, 81); and Iminophosphoranes & Related Compounds (62, 599).

The book is attractively produced with numerous equations, reaction schemes, diagrams and tables, and is obviously essential reading for researchers in this important area.

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Macmillan's Chemical and Physical Data

A.M. James and M.P. Lord, The Macmillan Press Ltd., London and Basingstoke, 1992, pp. 565 + xxv, £35
ISBN 0-333-51167-0

The major data handbooks for chemists (such as the Rubber Book and Lange's Handbook of Chemistry) have been going for so long, with their continuous updating, that it takes a very bold publisher to challenge them. Macmillan's have now produced a "compact and affordable" data book, and it is necessary to ask whether it has advantages over its long-established competitors. It claims to be up-to-date, reasonably but not 100% authoritative in terms of the data presented, easily accessible, and different from existing handbooks. I have tried to compare it with Lange's Handbook to establish just how different is really is.

It starts with Units, Conversion Factors, and Fundamental Constants, and it is good that SI and IUPAC recommendations are used throughout. Lange has a similar section. Then Properties of Materials are treated, listing densities, elastic moduli, viscosities etc. Not all of this is to be found in Lange. Next comes properties of the elements, with electronic structures, physical properties, crystal structures, ionisation energies, and electronegativities. Lange probably contains more, but dispersed. There follows General Properties of Molecules, with structural data (bond lengths and angles), shapes, dipole moments, character tables and crystal data. These are very much summaries, and the same material is in Lange.

The next section is Electricity and Magnetism. The magnetic and dielectric properties seem more exten-