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Book reviews

Reagents for Organic Synthesis, Vol. 4; by Mary Fieser and Louis F. Fieser, Wiley-Interscience, New York, 1974, 660 pp., $24.95.

Synthetic chemists have found the first three volumes of the Fiesers' *Reagents for Organic Synthesis* very useful and will welcome the new fourth volume of this series. Organometallic compounds figure importantly in its contents, and, indeed, on the jacket cover one finds a single formula: that of bis(acrylonitrile)nickel(0). As before, the authors have carefully culled the recent (1970-1972) literature for applications of organic, inorganic and organometallic reagents, old and new, and present them alphabetically according to reagent. References to 297 reagents mentioned in this series for the first time, as well as references to 380 reagents previously mentioned, are provided. The organometallic reagents covered span the entire range of main group and transition metal chemistry. Not only are their applications in synthesis discussed, but useful hints, with references, concerning their preparation or commercial suppliers are given. The synthetic chemist will find this volume a veritable gold mine of useful information. Its utility is enhanced by a thorough subject index, an author index, an index of reagents according to types and purpose and cross references to the earlier three volumes.

Department of Chemsitry,
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (U.S.A.)

DIETMAR SEYFERTH

Inorganic Syntheses, Volume XV; G.W. Parshall, editor-in-chief, McGraw-Hill Book Co., New York, 1974, xiv + 282 pp., $19.85.

This newest volume of the well-known and very useful *Inorganic Syntheses Series* has a strong bias toward organometallic chemistry in general and more specifically toward transition metal compounds which are important in homogeneous catalysis. The latter area, the editor-in-chief admits, reflects his own research interests, and through this fortunate circumstance, we have here detailed directions for the preparation of many interesting and useful organometallic compounds.

The book begins with a chapter on olefin—metal complexes and continues with preparations of transition metal hydride and dinitrogen complexes. In the third chapter the syntheses of 20 diverse triphenylphosphine complexes of Group VIII metals are detailed. A section of miscellany (Other Transition Metal Compounds) follows and it includes some π-allyl complexes of palladium and platinum. Chapter 5 is devoted to boron compounds and gives preparative directions for B_5H_9, $B_3H_8^-$ salts, some BH_3 adducts, triphenylborane, some

$NaBEt_3R$ (R = H, Et, C≡CMe) compounds, alkylboron hydrides and diethyl- and diphenyl-chloroborane. Germyl (GeH_3) derivatives of diverse sorts are covered in the next chapter and the syntheses of some organophosphorus compounds are provided in Chapter 7. The final chapter is a catch-all, but organometallic chemists will find the synthesis of trimethylgallium with which it starts useful. Syntheses of $Et_4N^+ SnCl_3^-$ and $Et_4N^+ GeCl_3^-$ also are worth special mention.

The general value of this series lies in the fact that one can be reasonably sure that these preparative recipes will work since they all have been checked by independent groups of workers. The special value of the present volume lies in the fact that so many of the compounds whose syntheses are reported actually are useful ones which find application in synthesis or in catalysis. The editor-in-chief may be congratulated on a job well done.

Department of Chemistry
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139 (U.S.A.)

DIETMAR SEYFERTH

Metal π Complexes, Volume II, Part 2, Specific Aspects; by Max Herberhold, Elsevier Publishing Co., Amsterdam, London, New York, 1974, xvi + 508 pages, Dfl. 250.00 (US$ 96.20)

Volume I of this monumental work was published in English in 1966, Volume II part 1 in 1972, and now part 2. The author is a member of the distinguished Department of Inorganic Chemistry at the Technische Universitat, Munich, where, under E.O. Fischer, much of the chemistry described in these volumes originated. The volume under review treats certain specific aspects of mono-olefin complexes in a very complete and thorough manner. In my opinion it is an excellent book for the research worker who needs a reasonably detailed background knowledge in the field. With its 2102 references it provides a useful key to the primary and review literature before about 1971, and by an extensive Appendix of 38 pages, through 1971 into 1972. It also represents a great amount of meticulous work on the part of its author, complemented by an excellent translation by J.A. Connor of Manchester. It is easy to read and full of well digested information. Spectroscopic (IR, UV, NMR, and mass spectra) and structural studies, stability, nature of olefin π-complexes in industrial processes are all aspects of mono-olefin π-complex chemistry very adequately treated. The text occupies 320 pages followed by 63 pages of references and the Appendix. There are also good Subject and Author indices, together occupying 84 pages. The book is well produced, as complete as humanly possible for its size, and remarkably free from error. I warmly recommend it to all engaged in olefin-complex and petrochemical research, whether academic or industrial.

School of Molecular Sciences
University of Sussex, Brighton BN1 9QJ
(Great Britain)

J. CHATT