

Book review

Inorganic Syntheses. Volume XX; edited by Daryle H. Busch (Ohio State University), Editor-in-chief. John Wiley and Sons, New York, 1980, xxi + 303 pages, U.S. \$ 29.95.

The latest volume of this series contains nearly 150 preparations, many of which are of interest to organometallic chemists. Chapter I deals with solid state chemistry and concentrates on methods of crystal growth in gels as well as on a series of partially oxidized tetracyanoplatinates. Chapter II, entitled "Stoichiometrically Simple Compounds", contains a variety of main group and transition element species. Notably, syntheses of ReCl_5 and Re_3X_9 ($\text{X} = \text{Cl}, \text{Br}, \text{and I}$) are detailed. In Chapter III, "Coordination Compounds", several pentakis-(phosphite) complexes of d^8 transition metals are presented. The synthesis of a sequence of trimethylphosphine-iron complexes are covered leading to and including a CO_2 adduct of $\text{Fe}[\text{P}(\text{CH}_3)_3]_3$. The synthesis of several bis(β -diketonato)platinum(II) complexes are discussed. The initial stage of these syntheses involves the use of $[\text{Pt}(\text{H}_2\text{O})_4]^{2+}$, for which a convenient preparation is given. Chapters IV and V cover complexes with complicated chelate ligands and compounds of biological interest. The majority of these involve macrocyclic amine ligands. Included within these chapters are syntheses of methylcobalamin and other cobalamin derivatives, and a section on the multistep preparation of $\text{M}(\text{N}_2)_2(\text{diphos})_2$, where $\text{M} = \text{Mo}$ and W .

Chapter VI, entitled "Organometallic Compounds", deals mainly with transition metals. A large series of syntheses are reported which yield products containing various halocyclopentadienyl ligands including the pentachlorocyclopentadienyl ligand, along with a synthesis of the ligand itself. A variety of other preparations include a metallo-acetylacetonate complex, $[\text{Mo}(\eta^6\text{-C}_6\text{H}_6)(\eta^5\text{-C}_5\text{H}_5)]$, several dimeric olefin platinum(II) halides, and two dimethylplatinum(IV) derivatives. The main group compounds are silyl and germyl selenides and tellurides, and various digermoxanes.

The last chapter contains the syntheses of several metal carbonyl clusters. An improved method for the preparation of $\text{Rh}_4(\text{CO})_{12}$ is given as is the procedure for converting this into $[\text{Rh}_{12}(\text{CO})_{30}]^{2-}$. The syntheses for two triiron anionic clusters is followed by a large section on various alkylidyne-nonacarbonyltri-cobalt clusters. One final note is in order. This volume has been dedicated to Paolo Chini and it is entirely appropriate that Chapter VII contains the synthesis of three of his rhodium carbonyl clusters.

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