

Book Review

Synthetic Methods of Organometallic and Inorganic Chemistry, Volume 2. By N. Auner, U. Klingebiel. Edited by W. A. Herrmann. Thieme: Stuttgart, 1996, 310 pp, hardback. DM185. ISBN 3 13 103031 3.

This is the second Volume of a new series that is a modernized, English-language version of a classic German language compendium, Georg Brauer's "Handbuch der Präparativen Anorganischen Chemie". Volume 1 was reviewed earlier [November 1996], together with general features of the series. This review focuses on Volume 2, which is divided into three chapters: group 1 and 2 element compounds (62 pages), group 13 element compounds (78 pages), and group 14 element compounds (156 pages). All chapters contain cross references to group 1, 2, 13, and 14 element compounds in the section on "commonly used starting materials" in Volume 1. In contrast, cross references between chapters do not appear to be given. Hence, in the case of a molecule with (for example) both group 1 and group 13 elements, two chapters or volumes must be searched.

The group 1 and 2 compounds in the first chapter include some "old standbys", such as *n*-BuLi and LDA solutions. However, most experimentals give powders or crystalline materials, which is important for reproducibility in many synthetic applications. Representative carbon-containing compounds include several trisubstituted aryl lithiums (including "supermesityl", 2,4,6-(*t*-C₄H₉)₃C₆H₂Li), C₆F₅Li, every variant of [(CH₃)₃Si]_x(H)_{3-x}CLi, numerous X₃SiLi, RR'NLi, and RR'PLi adducts, a farrago of alkoxides, lithium and sodium salts of substituted cyclopentadienide anions, and MCCM and MCCH species. Non-carbon-containing compounds include binary hydrides, oxides, nitrides, phosphides, arsenides, antimonides, and bismuthides. Reflecting the frequency of usage, somewhat fewer group 2 preparations are given.

The second chapter contains a similar mix of carbon-containing and non-carbon-containing compounds, with approximately equal emphasis on

each group 13 element. The full breath of boron and aluminum chemistry is represented, including procedures for reagents that have application in organic synthesis, the dianion [B₁₂H₁₂]²⁻, borabenzenes, various borates, and binary and ternary aluminum compounds.

The third chapter, which is the longest, features an eclectic mix of procedures. With silicon, the compound types noted above are augmented by cyclosilanes and a variety of organosilanes, including trifluoromethyl, cyclic acetylene or allene, and diazo derivatives. Many inorganic and organometallic silicon halides are described, as well as compounds with Si=C and Si=Si linkages, silylenes that can be isolated or easily generated, and transition metal complexes. The germanium, tin, and lead sections are successively shorter, but usually contain unsaturated M=X species, and group 1 metal, cyclopentadienyl, and transition metal derivatives.

Two general comments deserve emphasis. First, some procedures point out special hazards, as in the case of lead azide. However, readers are generally left to their own judgement, knowledge, and common sense on safety issues. Second, the index could be improved. Although entries are commonly cross-referenced under a generous number of synonyms, some items still fall through the cracks. For example, chapters 1 and 3 both contain procedures for [(H₃C)₃Si]₃CLi, but these fail to appear side-by-side in the index (under lithium compounds, they are given as tris(trimethylsilyl)methylithium and lithium tris(trimethylsilyl)methanide, respectively). Also, the preparations are based upon different literature reports, and the relative merits are not analyzed. Regardless, this is an immensely useful compendium. All readers will want to have the same access to this eight-volume series as they have to "Organic Synthesis", "Fieser and Fieser", and the more recent "Encyclopedia of Organic Reagents".

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