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Book review

Gmelin Handbuch der Anorganischen Chemie, Ergänzungswerk zur 8. Auflage. Vol. 24, Perfluorhalogenorgano-Verbindungen der Hauptgruppenelemente, Teil 3, "Verbindungen von Phosphor, Arsen, Antimon und Wismut"; A. Haas and H.-G. Horn, volume authors, D. Koschel, volume editor, Gmelin-Institut für Anorganische Chemie und Grenzgebiete der Max-Planck-Gesellschaft zur Förderung der Wissenschaften, Springer-Verlag, Berlin/Heidelberg/New York, 1975, vi + 233 pages, DM 392, $ 168.60.

The first volume of this Gmelin mini-series on perfluorohaloorganic compounds of the main group elements dealt with such derivatives of the Group VI elements. Volume 24 of the Gmelin New Supplement Series covers tri- and pentavalent perfluorohalo-organic derivatives of the Group V elements. Phosphorus compounds take up most of the book (186 pages); 38 pages are sufficient to cover the arsenic compounds; only 7 pages are needed for the antimony derivatives and all that is known about perfluorohalo-organobismuth compounds fills just one page.

The perfluorohalo-organic compounds which are included in this book are those whose organic substituents contain only fluorine and other halogens (but no hydrogen atoms) and include alkyl (mostly the extensively investigated CF_3 compounds), alkenyl, alkynyl (mostly $CF_3C{\equiv}C$) and aryl (mostly C_6F_5) compounds. Compounds which contain both perfluorohalo-organic and organic groups which do not contain fluorine are not included. Thus, by the rules which govern this coverage, $(CF_3)_3P$ is discussed in this book, but $(CHF_2)_3P$ and $CF_3P(CH_3)_2$ are not. Non-organic substituents may be present (e.g., H, halogen, OH, pseudohalogen, etc.). Metal and metalloid derivatives, e.g., $(C_6F_5)_2PLi$, $[(CF_3)_2As]_2Hg$, $(CF_3)_2PSiH_3$, $[(CF_3)_2PBH_2]_3$, etc., also are discussed. Transition metal complexes of perfluorohalo-organic phosphines, arsines and stibines are mentioned in this book, but their physical properties are not detailed.

Within these clearly stated limits, this volume provides the excellent, thorough coverage characteristic of the Gmelin Handbook. As usual, complete details concerning preparation, physical and spectroscopic properties, structure and chemical reactivity of the compounds are provided in the text and the many tables of data.

This book, like most Gmelin volumes, is written in German. English translations of the authors' preface, the table of contents and chapter and section headings are provided to assist the non-German reader. The literature is covered through the end of 1973, but some later references are given. The formula index for this volume will be provided in Volume 25 of the 8th Edition New Supplement Series which will deal with perfluorohaloorganic derivatives of the main group elements of Periodic Groups I through IV (exclusive of carbon).

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