

## Book review

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GMELIN HANDBOOK OF INORGANIC CHEMISTRY, 8th Edition, SULFUR, Supplement Volume, Section 1, THIONYL HALIDES, D. Hänssgen and E. Odenhausen, volume authors, H. Bitterer, volume chief editor, 1978, vi + 72 pages, DM 215, \$ 107.50. Section 2, SULFUR HALIDES, W. Behrendt, N. Baumann, H.-J. Fachmann, P. Kuhn and P. Merlet, volume authors, H. Bitterer, volume chief editor, 1978, xvi + 310 pages, DM 714, \$392.70. Gmelin Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften and Springer-Verlag, Berlin/Heidelberg/New York.

The literature of sulfur and its inorganic compounds was covered through 1949 in the Gmelin Handbook main volumes devoted to this element which were published in the period 1953-1963. The present books are the first two of a series which is intended to bring this coverage up-to-date with the results of research which was published in the period 1950-1976. Further volumes will appear in due course.

The present volumes deal with halogen derivatives of sulfur, compounds which the organometallic chemist uses on occasion as starting materials or reagents. Section 1, a slim volume of 72 pages, is concerned exclusively with the thionyl halides, while the much larger Section 2 covers binary sulfur halides: fluorides, chlorides, bromides and iodides, as well as mixed halides. The most important and well-studied of these are  $SF_4$ ,  $SF_6$ ,  $S_2F_{10}$ ,  $SF_5Cl$ ,  $SCl_2$  and  $S_2Cl_2$ , but also the less well-known are covered in detail. The highly toxic  $SF_4$  finds utility as a fluorinating agent, and there are 26 pages of text and references covering its reactions and applications in addition to 39 pages devoted to its preparation and properties. On the other hand,  $SF_6$  is nontoxic and unreactive under normal conditions. Nonetheless it is a well-studied molecule indeed, and it requires 96 pages to bring all that is known about this compound: preparation, purification and analysis, physical and

thermodynamic properties, spectroscopic properties, mechanical and thermal properties, electrical and magnetic properties, photolysis and radiolysis, reactions with chemical reagents of diverse types and applications.

Whatever is known about the other sulfur halides along these lines is presented in great detail. The literature coverage appears to be exhaustive and includes not only primary research journals, but also patents, government reports, reviews and monographs.

Each major section begins with a brief introductory review; both German and English versions are given. Although the text is in German, the non-German reader is aided by English translations of the preface, the table of contents, the chapter titles and the section headings.

The thionyl halide volume brings the same sort of information in the same sort of way about  $\text{SOX}_2$  ( $X = \text{F}, \text{Cl}, \text{Br}$  and  $\text{I}$ ) and  $\text{SOClF}$ ,  $\text{SOBrF}$  and  $\text{SOBrCl}$ . Since this volume is so short, one wonders why it was bound and published separately rather than being incorporated into Section 2, the sulfur halide volume.

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