

Book review

Gmelin handbook of inorganic chemistry, 8th Edition. *F — Fluorine*, Supplement Volume 3: *Compounds with Hydrogen*, Springer-Verlag, Berlin, Heidelberg, New York, 1982, vii + 345 pages, DM 1015. ISBN 3-540-93452-9.

This is the thirteenth volume of the Gmelin Handbook to deal with the chemistry of fluorine (System Number 5), although nine of these have been concerned primarily with the chemistry of perfluorohalogenoorgano compounds of the Main Group elements. This volume is devoted entirely to the compounds of fluorine with hydrogen, and describes hydrogen fluoride, the ions HF^+ , DF^+ and HF^- , the molecule H_2F and the ions H_2F^+ and H_2F^- , the ion H_3F_2^+ , the molecule HF_2 and the ion HF_2^- , the ions H_2F_3^- , H_3F_4^- and H_4F_5^- , and additional species of general type $\text{H}_x\text{F}_y^{n\pm}$. The chemistry of hydrogen fluoride, of course, comprises the major part (>90%) of this volume, and is described under headings including preparation (both laboratory and industrial), handling and uses of anhydrous hydrogen fluoride, molecular properties of hydrogen fluoride, physical properties of hydrogen fluoride, spectroscopic properties of hydrogen fluoride, HF and DF chemical lasers, DF—CO₂ transfer chemical lasers, energy-transfer processes, chemical reactions of hydrogen fluoride with both inorganic and organic materials (including both reactions of the gas and its properties as a non-aqueous solvent), the HF—H₂O system, the properties of aqueous hydrofluoric acid, and the properties of the fluoride ion.

It is a detailed examination of a volume such as this that reveals the nature of true scholarship. The presentation, content and organisation of this volume are, as usual for this series, impeccable. The value of the Gmelin Handbook to the whole chemical community is inestimable, and it must be considered with Chemical Abstracts as being one of the two major publications without the existence of which chemistry as a subject could not have advanced to its present state. Although the cost of individual volumes is often described as exorbitant, at a mean price of £1 per page, this is not a realistic criticism in 1984. A typical volume costs less than a fortnight of post-doctoral salary and, it might be argued, could contribute significantly more to a research group's progress. The work of the Gmelin-Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften cannot receive too much praise for the remarkable service it offers chemists, and I am delighted to be able to take this opportunity to express my own appreciation of their unique scientific contributions.