
 BOOK REVIEWS

Fluorine Chemistry. Volume II. Edited by J. H. SIMONS, Fluorine Research Center, University of Florida, Gainesville, Florida. Academic Press, Inc., Publishers, 125 East 23rd Street, New York 10, N. Y. 1954. x + 565 pp. 16 × 23.5 cm. Price, \$3.50.

This book, like volume 1, is composed of reviews of various topics in the field of fluorine chemistry. The articles are of excellent quality, being written by men who have themselves contributed extensively to the original research. Each author has surveyed the literature thoroughly and has given complete references to the literature. One who engages in research on fluorine or its compounds will surely wish to have this book and volume 1 on his shelf of reference books.

The book contains the following chapters: (1) Fluorine-containing Complex Salts and Acids, by Alan G. Sharpe; (2) Halogen Fluorides—Recent Advances, by H. J. Emeléus; (3) Analytical Chemistry of Fluorine and Fluorine-containing Compounds, by Philip J. Elving, Charles A. Horton and Hobart H. Willard; (4) Organic Compounds Containing Fluorine, by Paul Tarrant; (5) Metallic Compounds Containing Fluorocarbon Radicals and Organometallic Compounds Containing Fluorine, by H. J. Emeléus; (6) Fluorocarbon Chemistry, by J. H. Simons and T. J. Brice; (7) The Infrared Spectra of Fluorocarbons and Related Compounds, by D. G. Weiblen. Of these, chapters 2, 5 and 6 cover recent work and are continuations of similar chapters in volume 1. Extensive tables of properties of compounds are given in chapters 4 and 6, while chapter 7 contains diagrams of the infrared spectra of many fluorides, particularly of fluorocarbons and their derivatives.

When this reviewer first opened the book he looked eagerly in chapter 3 to find the procedures recommended for the analysis of fluorocarbons, but he was somewhat disappointed. He found the review of analytical chemistry of fluorides to be excellent and in some cases the authors had recommended certain procedures over others; however, they had missed an opportunity to help others by giving certain recommended procedures in detail.

It would of course be impossible to cover all aspects of fluorine chemistry in two books of the size of volumes 1 and 2 of this series. One can, therefore, find topics which have been discussed only a little. For example fluorocarbon polymers are not stressed, nor are the practical applications of the fluorides.

The only adverse criticism of the book which this reviewer can make is a matter of personal opinion rather than a question of fact or error. It has to do with the system of nomenclature of fluorocarbons and their derivatives originated and expounded by the editor. A very different system has been recommended by the Committee on Nomenclature, Spelling and Pronunciation of the American Chemi-

cal Society [*Chem. Engineering News*, **30**, 4514 (1952)] and it is hoped that chemists in general will follow this system rather than that of Simons.

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Structure of Molecules and Internal Rotation. By SAN-ICHIRO MIZUSHIMA, Professor of Physical Chemistry of the University of Tokyo. Academic Press, Inc., 125 East 23rd Street, New York 10, N. Y. 1954. x + 244 pp. 16 × 23.5 cm. Price, \$6.00.

The subject of internal rotation appears at first sight to be a specialized topic which is of restricted interest to the problems of molecular structure. The author shows clearly that this is not the case, and that rotation about a single bond is of fundamental importance in the structure of molecules. This book is important therefore to all who are interested in molecular structure.

After a brief historical introduction the general problem of internal rotation is stated, and brief description of the physical methods used in solution of the problem is presented. Description is given then of specific groups of compounds in which internal rotation occurs. The halogen derivatives of ethane, which have been studied extensively by the author, are treated first. Evidence from the Raman effect, infrared absorption spectra, dielectric constant and heat capacity measurements are used to deduce the nature of internal rotation about the C-C bond. Rotation about other single bonds in chain and cyclic compounds is discussed. Interesting chapters on the effect of internal rotation on the structure of long chain paraffins and of poly-peptides conclude the descriptive part of this monograph.

The second part is concerned with fundamental principles of methods used in structure determinations, and with experimental equipment used, particularly specialized equipment developed by the author. The theory of normal vibrations is developed briefly, and is applied in detail to molecules which exhibit internal rotation. The inclusion of this material serves to make the monograph self-contained, in the sense that sufficient specialized theory and description of equipment is included to make the subject fairly clear to the non-specialist. The theoretical and experimental is naturally too brief to be of much value to the specialist, but evidently it was not the intention of the author to write another complete text on the fundamentals of molecular structure. As it stands, the monograph is a valuable contribution to one aspect of molecular structure whose importance perhaps is not universally appreciated.

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