New Books

J.F. Gerecht, Book Review Editor

Chemistry of Organic Fluorine Compounds, Second (Revised) Edition, by Milos Hudlicky (Halsted Press, New York, NY, 1976, 728 p, $77.50).

This second (revised) edition is a comprehensive survey of organic fluorine chemistry covering research published through 1971. The book is primarily a compilation of synthetic methods with emphasis on the practical aspects of fluorine chemistry; it is intended by the author to be most useful as a laboratory manual. The format is similar to the first edition, published in 1961, but each chapter is extensively expanded and updated.

The book consists of eleven chapters. The Introduction is noteworthy since it contains an excellent bibliography of monographs on fluorine chemistry, published from 1900 to 1974. Chapters 2, 3, and 4 deal with the preparation, properties, and handling of fluorine, hydrogen fluoride, and a variety of inorganic fluorides, with particular attention to their use as fluorinating agents. The longest chapter (348 pages) relates to the reactions of organic fluorine compounds. Topics discussed are: reduction, oxidation, halogenation, nitration, nitrosation, sulfonation, acid-catalyzed syntheses, hydrolysis, alkylation, arylation, acylation, sulfonylation, base-catalyzed condensations, organometallic reactions, additions (nucleophilic and free radical), eliminations, molecular rearrangements, pyrolysis and photolysis. Topics in subsequent chapters include (1) fluorinated organic compounds as reagents; (2) physical, physicochemical, and biological properties; (3) analyses and structure determinations; (4) industrial applications; (5) suggested methods (tables) for preparing the main classes of compounds; and (6) experimental procedures. The experimental procedures chapter gives 205 detailed procedures for preparing selected fluorinating agents and organic fluorine compounds.

Throughout the book, the various reactions and other data are clearly illustrated in the form of 1,520 equations and over 200 tables giving the main products, yields, and experimental conditions. Approximately 3,850 literature references are cited. However, because of the recent updating of this edition in 1968 the references are found in two separate sections. Aside from the corrections given in the Errata, other typographical errors are minor and should not detract from the quality of the book.

In general, the book is well-written and contains a wealth of information on the preparation of organic (and inorganic) fluorine compounds; it should be a valuable reference to those familiar with the field as well as an excellent introduction to those initiating research in fluorine chemistry. Unfortunately, the high price of the book will deter many from owning a personal copy.

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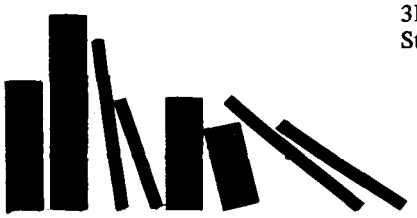

Surface and Colloid Science, Vol. 9, edited by E. Matijevic (John Wiley & Sons, New York, 1976, 359 p. $34.95).

Volume 9 of this open-ended series of reviews on selected topics in surface and colloid science is an excellent addition, with something for everyone. The book contains four chapters by recognized experts in their respective areas. The first two chapters should be of particular interest to regular readers of this journal.

Chapter 1 (by B.J. Carroll) deals with "The Stability of Emulsions and Mechanisms of Emulsion Breakdown," a topic of never-waning theoretical and technical interest. Recent developments are well covered, as attested to by the fact that almost half of the 300 references date from 1970 or later. In spite of the real progress that has been made, the author points out the serious limitations and numerous contradictions that still exist in our present state of knowledge.

Chapter 2 (by T. Nakagawa and F. Tokiwa) reviews the state of the art of "Nuclear Magnetic Resonance of Surfactant Solutions." The reader is assumed to be familiar with the basics of NMR spectroscopy. The authors emphasize new knowledge and information that could not have been easily obtained in any other way, such as: certain aspects of micelle formation and structure; composition of, and interactions in, mixed micelles; locus of solubilizates in micelles; structure of mesomorphic phases; surfactant characterization; residence times in micelles, etc.

Chapter 3 (by D.G. Schmidt and T.A.J. Payens) treats "Micellar Aspects of Casein." Compared to the other three, this chapter will probably be of direct interest to a more select circle of readers, not because of any deficiency in quality, but rather because of the specificity of the subject. Nevertheless, it constitutes a very instructive illustration of what a wealth of information can be generated on a single but complex system by the combined use of a battery of techniques (e.g., electron microscopy, solubilization, dialysis, ion binding, light scattering, electrokinetics, viscometry, sedimentation, etc.). Since similar approaches are called for in other, particularly biological, systems, this chapter is well worth reading, even by those not directly involved with casein.

Chapter 4 (by S.J. Gregg and K.S.W. Sing) deals with "The Adsorption of Gases on Porous Solids." This is an extremely lucid, well written and balanced treatment of this increasingly important subject. Macroporous (and nonporous), mesoporous, and microporous solids are thoroughly discussed in this order. The authors are careful to point out the limitations of, and pitfalls in, the various approaches developed in recent years, and suggest further research that will put this area on an even firmer foundation.

As indicated above, this volume will have something to offer to almost anyone active in the field of surface and colloid science. Typographical errors are more numerous than might have been expected; they lead to confusion in only a few cases, however.

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