

Book Reviews

Chemistry of Organic Fluorine Compounds II. Edited by M. Hudlicky and A. Pavlath. ACS Monograph 187, 1995, 1296 pp, hardback. US \$ 169.95. ISBN 0-8412-2515-X.

To most synthetic chemists Hudlicky's 1976 "Chemistry of Organic Fluorine Compounds, a Laboratory Manual" has become indispensable. It is the most comprehensive and systematic text on this subject and includes very useful chapters on general experimental procedures, fluorinating agents, laboratory equipment, properties and analytical methods, usually not found in similar books. Its only serious drawback had been that it covered the literature only until 1972. This shortcoming has now been alleviated by a second volume with the same title. It is edited by Prof. Hudlicky and Dr. Pavlath and follows the same format, covering the literature from 1972 through 1992. The contributions to this book were written by 44 authors who are all recognized experts in this field. They have done an excellent job to critically review and evaluate more than 4500 references.

Volume II contains 8 chapters. Seven of these cover the same subjects as in Volume I, with the emphasis on chapter 4 (Reactions of Organic Fluorine Compounds, 640 pp). The chapters on "Apparatus and Material", "Preparation of Organic Fluorine Compounds", and "Procedures" have unfortunately been dropped in Volume II, thus deemphasizing the "Laboratory Manual" aspect of this book. This may have been necessitated by the large number of individual contributors to Volume II, compared to the single author of Volume I. The only new chapter in Volume II is a useful brief listing of books and review articles which have appeared since 1972.

In summary, this book, following the tradition of the first volume, has been referenced and edited with great care and is easy to use. Since information given in Volume I is not repeated in Volume II, it is important that both books are used as companions. Volume I, which had been out of print for a long time, is now available again through Ellis Horwood, Chichester, England. The two volumes are an absolute must for any practicing fluorine chemist and research library and are highly recommended.

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Modern Acetylene Chemistry. Edited by P. Stang and F. Diederich. VCH: Weinheim, 1995, ca. 400 pp, hardback. DM 168. ISBN 3-527-29084-2.

"There is no other functional group in organic chemistry that can compete with the carbon-carbon triple bond in richness and diversity of chemical reactivity". This is the first sentence of the review written by Henning Hopf and Bernard Witulski, one of the thirteen chapters in the new book on acetylenic chemistry. The book continues on the various books and reviews dealing with the synthetic and more theoretical aspects in the field. The editors have succeeded in persuading twenty seven distinguished specialists to participate with critical, updated reviews describing the modern developments in acetylenic chemistry. A considerable part of the book is devoted to the synthesis of structurally interesting molecules containing one or several $C\equiv C$ units. Scientists working on the interface between material science and chemistry are served with the chapters on Polyacetylene (30 pages, 159 refs), Acetylenic compounds as building blocks for high-spin molecules and molecular assemblies (29 pp, 59 refs), Acetylenes in nanostructures (27 pp, 40 refs) and Oligoacetylenes (28 pp, 76 refs). Two other chapters describe the Preparation and properties of cyclic alkynes (34 pp, 86 refs) and Macrocyclic homoconjugated polyacetylenes (30 pp, 45 refs). The fascinating chapter 7 (80 pp, 279 refs) deals with the discovery and synthesis of ene-diyne antibiotics (naturally occurring as well as designed ones), of which some show a significant anti-tumor activity. The admiration of the reader for the chemists who accomplished the total syntheses of these complicated molecules would be hardly less, when the ca. ten pages devoted to the syntheses of the sugar fragments had been omitted. In addition to the chapters on these usefully applied chemistry of acetylenes, a reasonable number of pages have been reserved for more fundamental chemistry: chapter 1 (32 pp, 273 refs) on Computational and theoretical aspects, chapter 2 (33 pp, 124 refs) on Cyanoacetylenes and haloacetylenes, chapter 3 (31 pp, 93 refs) on Alkynyliodonium salts, chapters 4 and 5 on Metal-alkyne complexes (39 pp, 233 refs; 33pp, 133 refs) and chapter 6 (28 pp, 66 refs) on Phosphaalkynes. This outsider will be spontaneously accepted as a part of the book because of the highly interesting chemistry shown.

During the period 1940 and 1970 there has been a considerable activity in the research based on acetylene and derivatives. Although the more recent progress in the development of new synthetic methods is relatively small, an additional chapter could have been devoted to new and useful new reactions, such as the cross-coupling between metallated or free 1-alkynes and vinylic or aryl halides under the influence of palladium and copper compounds. This method of coupling is frequently applied in syntheses of natural products and oligoacetylenes. It was a good idea of the editors, to ask the authors to illustrate the text with experimental procedures, thus increasing the value of this monograph as a handbook. Procedures for important starting compounds such as dicyanoacetylene $\text{NC}\equiv\text{C}-\text{C}\equiv\text{C}-\text{C}\equiv\text{N}$ or the

phosphorus compound $(\text{CH}_3)_3\text{C}-\text{P}\equiv\text{C}$ are highly relevant, because their easy availability gives access to extensive fields of investigations, some others have less value in the opinion of the reviewer, while the chapter on the enediyne antibiotics could have been enriched with (checked) procedures for simple compounds such as *cis*- $\text{HC}\equiv\text{C}-\text{CH}=\text{CH}-\text{C}\equiv\text{CH}$. This excellent book is of interest for a broad class of organic chemists, especially those who are dealing with material science and organometallic chemistry and organic synthesis.

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