

Book Reviews *

Synthetic Organic Sonochemistry. By Jean-Louis Luche (Universite de Savoie, France). Plenum Press: New York. 1998. xx + 431 pp. \$115.00. ISBN 0-306-45916-7.

The author has successfully brought together data, which are scattered throughout the literature, and presented the results in a coherent and useable manner. This monograph focuses specifically on sonochemistry applied to organic synthesis. As such it will be a useful reference for synthetic organic chemists who would like to try out the method, as well as for chemists who routinely do sonochemistry. There is an abundance of examples and new ideas that will stimulate further exploration. Many of these are from references to work done in the last five or six years.

The book contains nine chapters which cover the following subjects: 1. Theoretical Bases; 2. Sonochemistry of Solutions; 3. Cycloadditions; 4. Sonochemistry in Biphasic Systems; 5. Organometallic Sonochemistry; 6. Catalytic Reactions; 7. Organic Sonoelectrochemistry; 8. Practical Considerations for Process Optimization; 9. Selected Experiments. At the end of the book, there is a section entitled *Conclusions—Sonochemistry: Quo Vadis?* Each chapter has one or more coauthors.

The author and his coauthors point out that, from a theoretical point of view, sonochemistry is highly complex. They explore subjects such as cavitation, nucleation, bubble dynamics, and chaotic behavior, giving the reader a clear idea of the difficulty of the topic. The superposition of effects makes it difficult to determine exactly what is going on in particular reactions. However, it is important to work for a more comprehensive understanding. This is an area that may be of interest to theoretical physical chemists, as well as to synthetic organic chemists.

This is not the kind of book that one is likely to pick up and read from cover to cover. However, as a reference book, it has real value. The sections on synthetic applications are especially useful since an extensive variety of reactions is discussed throughout the book. In addition, Chapter 9 contains selected experiments that permit one to carry out the synthesis. The detail and specific data are often sufficient to allow the reader to do the work without having to look up the original references. The classes of compounds covered include aldehydes, alkanes, amides, amines, aryl compounds, cyanides, cyclic compounds, diorganozinc reagents, epoxides, esters, halides, hydroxyl compounds, ketones, lactones, nitroxides, olefins, pyrazolines, quinones, and sulfones.

In the conclusions the authors discuss the classification of sonochemical effects and suggest a general approach to such a classification. They also compare sonochemistry with other fields, such as photochemistry, radiochemistry, electrochemistry, plasma chemistry, piezochemistry, flash thermolysis, and chemistry in supercritical fluids. Such a comparison is useful for anyone considering designing sonochemical reactions based on results obtained in any of these fields.

To summarize, the book is especially useful as a reference. The author has presented a cohesive and well-organized overview of this topic. He has also been successful in pointing out the many areas in which research is still needed to fully understand the physical and chemical processes that occur. This work provides the researcher with a wealth of information and many questions that should stimulate further investigation.

Ruiss Van Fossen Ramsey, *Indiana University of Pennsylvania*

JA9857817

10.1021/ja9857817

Advances in Molten Salts. From Structural Aspects to Waste Processing. Edited by Marcelle Gaune-Escard (IUSTI, Marseille, France). Begell House: New York. 1999. xii + 732 pp. \$127.50. ISBN 1-56700-142-4.

This book was developed from the European Research Conference on Molten Salts, held in July 1998, and brings together the latest

discoveries in the field in the form of 63 papers from both academic and industrial scientists.

JA995802C

10.1021/ja995802c

Advances in BioChirality. Edited by G. Pályi, C. Zucchi (University of Modena), and L. Caglioti ("La Sapienza", Rome). Elsevier: Amsterdam. 1999. viii + 408 pp. \$175.00. ISBN 0-08-043404-5.

This book, developed from a symposium on Biological Homochirality held in September 1998, takes an interdisciplinary approach to the subject of biological homochirality. Its 30 chapters feature contributions from a diverse field of experts, ranging from synthetic chemists and theoretical topologists to space and materials scientists. Some of the topics covered include the theory and origins of biochirality, autocatalysis with amplification of chirality, macroscopic biochirality, paleochirality, the extraterrestrial origin of chirality, D-amino acids, chemical transfer of chirality, PV effects, and polarized radiation chemistry.

JA995805P

10.1021/ja995805p

Houben-Weyl. Methods of Organic Chemistry. Additional and Supplementary Volumes to the 4th Edition. Volume E 10b/Part 2. Organo-Fluorine Compounds. Edited by Bernd Baasner (Bayer AG, Leverkusen), H. Hagemann (Bayer AG, Leverkusen), and J. C. Tatlow (Birmingham). Georg Thieme Verlag: Stuttgart. 1999. xvi + 882 pp. DM 3300. ISBN 3-13-119134-1.

A companion to Part 1, which was also published in 1999, this valuable source book surveys the academic and patent literature of the synthesis of fluorinated compounds through the 1990s.

JA995807+

10.1021/ja995807+

Houben-Weyl. Methods of Organic Chemistry. Additional and Supplementary Volumes to the 4th Edition. Volume E 23c/Part 1. Substance Index. Aliphatic Compounds I. Carbonyl Compounds. Georg Thieme Verlag: Stuttgart. 1999. viii + 1154 pp. DM 3300. ISBN 3-13-101674-4.

This book as an index listing all chemical compounds containing a tetrahetero-substituted carbon or a trihetero-substituted carbon that were featured in the Houben-Weyl supplementary volumes E 1–E 21.

JA995809U

10.1021/ja995809u

Houben-Weyl. Methods of Organic Chemistry. Additional and Supplementary Volumes to the 4th Edition. Volume E 23j. Substance Index. Cyclic Compounds VI. Bicyclic Compounds II. Georg Thieme Verlag: Stuttgart. 1999. viii + 630 pp. DM 3300. ISBN 3-13-111694-3.

This book provides an index of all chemical compounds containing bicyclic systems of more than five members that are featured in the supplementary volumes of Houben-Weyl E 1–E 21, including carbocyclic, heterocyclic, and organometallic bicyclic systems.

JA995808Z

10.1021/ja995808z

*Unsigned book reviews are by the Book Review Editor.