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Book Reviews

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BOOK REVIEWS

Walter E. Keller, *Phase-Transfer Reactions, Fluka-Compendium Volume 3*, Georg Thieme Verlag Stuttgart-New York, 1992, XXIX + 1080 pages, DM 540, ISBN 3-13-733901-4.

This volume continues the line laid down in the well-known first two volumes of this series, i.e. the tabular presentation of phase transfer reactions indicating the reaction conditions, the yield, and the reference, organized according to the types of compounds synthesized. The present volume covers work published during the period 1984 to mid-1989 with approximately 7500 reaction equations, citing 140 review articles and 2300+ original papers which brings the contents of the complete series up to 12000+ reactions and 4938 literature references.

The sparse text of the book contains occasional Germanisms such as "alkine", but this makes hardly a dent in its eminent readability. Lavish use of structural formulas is made which allows a secure and efficient scan of the many pages.

Of special interest to sulfur chemists are, besides a multitude of heterocyclic reactions, (in the order of their appearance) sections on seleno and thio acetylenes, sulfonyl azides, dithiocarbamates, thiocarbonates, mercapto carboxylic acids, sulfonyl carboxylic esters, thiocarboxylic esters, disulfides, sulfonyl fluorides, *S*-glycosides, isothiocyanates, cephems, oxathiacoronands, thiacoronands, thiols, nitro sulfones, nitro sulfoxides, sulfur ylide complexes of palladium, epoxy sulfonamides, various sulfur-containing phosphorus compounds, sulfur-containing polymers, selenium compounds, sulfamates, sulfate esters, sulfinic acids, sulfonamides, sulfones, sulfonic esters, sulfoxides, sulfur imines, sulfenimides, sulfinamides, sulfinic esters, sulfonic acids, sulfonimides, sulfur imides, tellurium compounds, thiiranes, thioacetals, thiocarboxylic esters, thiocyanates, thiodiimides, sulfides, and thioureas.

There are no indexes. Cross-referencing between the list of reactions and the list of phase transfer reagents would have been helpful as would have mention of the physical and chemical data of the reagents as well as mention of their commercial sources.

Even the most seasoned and well-read synthetic chemist will be able to find new and useful information in this indispensible handbook. Paying its not insubstantial price one is relieved of lengthy and tedious online searches. However, in this day and age of computerized information processing, desk top publishing

etc. there is no serious excuse for a time lag of three years from the close of the literature search to the publication of the finished book.

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S. Oae and T. Okuyama (Eds.), *Organic Sulfur Chemistry: Biochemical Aspects*, CRC Press, Inc., Boca Raton etc., 1992, ISBN 0-8493-4740-8, £ 109.00.

This book has been written by nine authors and contains the following chapters:

1. S. Takakuwa: Biochemical Aspects of Microbial Oxidation of Inorganic Sulfur Compounds.
2. N. Ueyama and A. Nakamura: Sulfur Ligand in Metalloproteins and Metalloenzymes (sic!).
3. K. Ogino and H. Fujihara: Biochemical Reactions Involving Thioesters.
4. Y. H. Kim: Biochemistry of Disulfides (sic!).
5. S. Oae: Oxygenation and Oxidation of Sulfur Compounds.
6. H. Togo and S. Oae: Reduction of Sulfur Compounds.

There is a 7 page subject index.

This book is a treasure trove of valuable and timely information, presented in a lucid and competent manner. It is truly amazing how detailed and operational our knowledge of nature's sophisticated use of sulfur functions has become. Extensive tables and vivid graphic presentations help the reader, including the non-specialist, to focus on the salient points of the presentation. It is likely that the biochemistry shown here will be seminal for future activities of synthetic chemists interested in agonist/antagonist design and/or in biomimetic chemistry.

The few critical comments one could make concern a limited number of linguistic oddities like the titles of chapters 2 and 4, the almost total lack of post-1989 references (which indicates an excessive production time), and the fact that Chapter 1 tucks its references to review articles away in its epilogue rather than mentioning them in the introduction. There are only few misprints, but just for the record three incorrect structural formulas on p. 24 should be mentioned.

Very few departmental libraries will wish to forego this important source of vital information and the more affluent research chemist is likely to acquire this book for his personal library.

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S. Oae, *Organic Sulfur Chemistry: Structure and Mechanism*, CRC Press, Boca Raton, Ann Arbor, Boston, London, 1991, ISBN 0-8493-4739-14, pp. 441, £ 123.50.

This book, written by S. Oae (with J. Takahashi Doi as associate editor, an unusual constellation for a single-author volume), contains the following chapters:

1. Sulfur Bonding.
2. The Stereoelectronic Effects of Sulfur Groups.
3. Stereochemistry.
4. Substitution.
5. Ligand Coupling Reactions Within Hypervalent Specias.
6. Oxidation and Oxygenation.
7. Reduction.
8. Rearrangements.

The detailed subject index is decidedly user friendly.

Many organic sulfur chemists have long felt the need for a textbook which could help Ph.D. students engaging themselves in sulfur research to acquire a special background knowledge of their newly chosen subject which goes well beyond the meagre coverage in standard organic textbooks. Professor Oae meets this need to some extent by addressing important and intriguing questions, drawing on his vast personal experience with organic sulfur chemistry in general and with the historical development of theoretical concepts in general. However, the choice of subjects is unsystematic and corresponds to the author's personal interests. Thus, virtually nothing is said about thiocarbonyl compounds. The coverage of the literature is likewise haphazard and certainly not up to date; obviously the bulk of the references is taken from the author's private files collected in support of his own research and without the benefit of present-day computerized search facilities. On the other hand, the material contained in this book is presented in a lucid and thought provoking manner and certainly fulfills its intended role as a source of inspiration and as a hotbed of ideas for future research.

While the substantial merits of this book are beyond discussion it does have distinct weaknesses which ought to have been remedied by a competent editor. For instance, while the discussion of outdated ideas and concepts, often (by present-day standards) based on rather crude experiments and/or calculations, could be useful and thought provoking in a separate chapter on the historical development of sulfur chemistry, it is rather confusing and distracting for readers seeking up-to-date coherent information. The description, in a 1991 book, of a 1930 paper as being more than 50 years old, the failure to quote and use recent reviews (such as those contained in the Houben-Weyl and Patai series and other contemporary sources), and the grossly outdated and lopsided presentation of topics such as α-disulfoxides or α-keto sulfoxides will confuse neophytes and irate seasoned sulfur chemists. On p. 3 Table 2 appears to be nonsensical. It claims that the S-S bond dissociation energies of ten compounds are 26–32 kcal/mol

(while those of other compounds are shown with precise values), irrespective of structure which contradicts the discussion in the text of the influence of substituents on the S-S bond dissociation energies of diaryl disulfides and which, taken at face value, would imply that the S-S bond dissociation energy of diethyl disulfide is more than twice as large as that of dioctadecyl disulfide. The quotation of Japanese journal articles, books, and patents without accompanying Chemical Abstracts references is a disservice to non-Japanese readers. The uneven style and quality of the artwork, apparently copied from the original literature and unedited, does not make sense in a high-priced book such as this which (judged by the age of the most recent references) has taken more than two years to produce. The number of misprints (including remarkably many misspelled authors' names and strange Latin names of microorganisms) and grammatical errors, though hardly compromising the author's message, is well above the pain threshold.

There is no doubt in this reviewer's mind that Professor Oae's book will be avidly read by the sulfur community and also be appreciated as background material for research seminars etc. The book's strong autobiographical flavor will appeal to chemists interested in the recent history of chemistry and the flow of ideas between countries as well as between diverse chemical disciplines.

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R. P. T. Davenport-Hines and J. Slinn, *Glaxo: A History to 1962*, Cambridge University Press, Cambridge etc., 1992, ISBN 0 521 41539 x, 406 pp., £ 55.00.

This scholarly book describes the early history of the Glaxo company and its founder family Nathan in considerable detail. It is generously illustrated with both black-and-white and color pictures (some, unfortunately, poorly reproduced or taken from damaged originals), the earlier ones with a distinct nostalgic flavor. Picture 27 (on p. 142), claimed to show a model of penicillin, obviously shows a model of the *Penicillium* mold which produces penicillin.

Quite obviously, this company history is intended for a general readership rather than the pharmaceutical and chemical community. The company's arduous way from dairy products over baby food to pharmaceuticals is meticulously chronicled. Its shifting economic fortunes as well as the individual contributions of Glaxo's successive top managers and owners are depicted in considerable detail. Glaxo's early involvement with the practical development of key pharmaceuticals such as griseofulvin, penicillin, streptomycin, vitamin B_{12}, and vitamin D equates this company history to a large extent with the history of these

therapeutic breakthroughs. A short epilog sketches Glaxo's post-1962 development with spectacular successes like the antiasthmatics salbutamol and beclomethasone, the blockbuster antiulcer drug ranitidine, and with a dramatic 100-fold increase in research spending between 1964 and 1984.

Altogether this book will fascinate the scientifically enlightened economist as it will the business minded scientist or production engineer. With its detailed documentation it will make an excellent case story in a seminar devoted to business strategy or to industrial and entrepreneurial history.

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