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Book Reviews

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BOOK REVIEWS

N. Petragani, *Tellurium in Organic Synthesis*, Best Synthetic Methods, Academic Press, London, 1994, 248 pp., ISBN 0-12-552810-8, £45.00.

The successful introduction of selenium compounds as highly specific reagents for organic synthesis which gained momentum in the decade 1975–85 was, quite logically, followed by research into the application of the next higher group 16 element, tellurium. Indeed, this research demonstrated that a number of key tellurium reagents could be handled easily and used in the same manner as their selenium analogues. It further revealed a number of, more or less subtle, differences which could make the choice between the two types of reagent a tool for the fine tuning of preparative sequences.

The application of selenium to organic synthesis was reviewed in monographs by Paulmier (1986) and Liotta (1987) and it seems quite appropriate considering the time lag between the development of selenium and tellurium reagents that a monograph reviewing the synthetic application of the latter should appear now.

The author having around 40 years of experience in organic tellurium chemistry does not intend to compete with the 1990 volume of Houben-Weyl dealing with tellurium chemistry. Instead the text is centered upon the preparation and application of the key tellurium reagents and aimed at 'chemists who, although not experts in tellurium chemistry, have had a basic grounding to graduate level in organic chemistry and with sufficient experience of typical experimental operations'. The text is divided into three main chapters. The first one, 8 pp., and the second, 80 pp., describe the preparation of inorganic and organic tellurium reagents, respectively. The third chapter (134 pp.) is devoted to the application of these reagents for synthetic purposes.

Each chapter is subdivided at three levels, according to reagent type in the two first and to type of transformation in the third, with references (covering up to 1992) appearing at the end of each second level. This organization makes it easy to search out the entries as well as the literature covering a given subject. As a very useful feature the majority of the transformations mentioned are illustrated by inserts describing typical experimental conditions and thus allowing the reader to assess the complexity of the procedures without resort to the primary source.

A summarization of literature results with respect to scope of reaction and relative merits of tellurium and selenium reagents is given only for a few key reactions. While deplorable this fact probably reflects the present state of the art: many reactions are still explored only at the model stage and the necessary information is missing.

Finally a warning: This book appears to suffer from a too narrow production schedule. The reaction schemes, in particular towards the end of the text, are riddled with typographical errors ranging from the slightly amusing (those which are immediately spotted) to the highly frustrating (those which require a consultation of the original papers for clarification).

In conclusion the present text constitutes a useful handbook for the preparative chemist who wants information on the possibilities inherent in tellurium reagents and who can live with the fact that the reaction schemes of the text cannot *a priori* be taken at face value.

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C. J. Mussinan and M. E. Keelan eds., *Sulfur Compounds in Foods*, ACS Symposium Series No. 564, American Chemical Society, Washington, DC, USA, 1994, ix + 301 pp., ISBN 0-8412-2943-0, \$ 79.95.

This book originates from a 1993 symposium and contains the following chapters:

1. C. J. Mussinan and M. E. Keelan: Sulfur Compounds in Foods: An Overview.
2. B. S. Mistry, G. A. Reineccius, and B. L. Jasper: Comparison of Gas Chromatographic Detectors for the Analysis of Volatile Sulfur Compounds in Foods.
3. J. S. Steely: Chemiluminescence Detection of Sulfur Compounds in Cooked Milk.
4. S. G. Wyllie, D. N. Leach, Y. Wang, and R. L. Shewfelt: Sulfur Volatiles in *Cucumis melo* cv. Makdimon (Muskmelon) Aroma: Sensory Evaluation by Gas Chromatography-Olfactometry.
5. A. M. Spanier, C. C. Grimm, and J. A. Miller: Sulfur-Containing Flavor Compounds in Beef: Are They Really Present or Are They Artifacts?
6. E. Block and E. M. Calvey: Facts and Artifacts in *Allium* Chemistry.
7. M. Naim, U. Zehavi, I. Zuker, R. L. Rouseff, and S. Nagy: Effect of L-Cysteine and N-Acetyl-L-cysteine on Off-Flavor Formation in Stored Citrus Products.
8. H.-W. Chin and R. C. Lindsay: Modulation of Volatile Sulfur Compounds in Cruciferous Vegetables.
9. F. Shahidi: Thioglucosides of *Brassica* Oilseeds and Their Process-Induced Chemical Transformations.
10. F. Chan and G. A. Reineccius: Kinetics of the Formation of Methional, Dimethyl Disulfide, and 2-Acetylthiophene via the Maillard Reaction.
11. Y. Zheng and C.-T. Ho: Kinetics of the Release of Hydrogen Sulfide from Cysteine and Glutathione During Thermal Treatment.
12. J. M. Ames: Volatile Sulfur Compounds in Yeast Extracts.
13. T. H. Parliment and H. D. Stahl: Generation of Furfuryl Mercaptan in Cysteine-Pentose Model Systems in Relation to Roasted Coffee.

14. F. Shahidi, A. C. Onodanlore, and J. Synowiecki: Heat-Induced Changes of Sulfhydryl Groups of Muscle Foods.
15. D. S. Mottram and M. S. Madruga: Important Sulfur-Containing Aroma Volatiles in Meat.
16. T.-H. Yu, C.-M. Wu, and C.-T. Ho: Volatile Compounds Generated from Thermal Interactions of Inosine-5 ϕ -monophosphate and Alliin or Deoxyalliin.
17. M. Güntert, H.-J. Bertram, R. Emberger, R. Hopp, H. Sommer, and P. Werkhoff: Thermal Degradation of Thiamin (Vitamin B₁): A Comprehensive Survey of the Latest Studies.
18. R. Tressl, E. Kersten, C. Nittka, and D. Rewicki: Formation of Sulfur-Containing Flavor Compounds from [¹³C]-Labeled Sugars, Cysteine, and Methionine.
19. K. Kubota and A. Kobayashi: Sulfur Compounds in Wood Garlic (*Scorodocarpus borneensis* Becc.) as Versatile Food Components.
20. J. P. Eiserich and T. Shibamoto: Sulfur-Containing Heterocyclic Compounds with Antioxidative Activity Formed in Maillard Reaction Model Systems.
21. M. Friedman: Mechanisms of Beneficial Effects of Sulfur Amino Acids.
22. L. K. T. Lam, J. Zhang, F. Zhang, and B. Zhang: Inhibition of Chemically Induced Carcinogenesis by 2-*n*-Heptylfuran and 2-*n*-Butylthiophene from Roast Beef Aroma.

The reader is provided with a wealth of information including a thorough presentation of the state of the art with regard to sulfur sensitive gas chromatography detectors, the problems with artifacts in the gas chromatographic analysis of flavors and the devious ways in which sulfur-containing volatiles can form during food processing.

The book's user friendliness is somewhat diminished by the half-hearted editorial effort: substandard structural formulas (for instance on p. 91), lack of margin justification (for instance in Chapter 10) and uncomfortably tightly spaced text (for instance in Chapter 6) have been allowed to survive the editing process. Improper spelling (for instance 1,2-ethane dithiol) and improper nomenclature (for instance butyl mercaptan) should have been weeded out by the editors. The subject index fails to list individual compounds; on the contrary, a comprehensive and detailed table with all sulfur compounds mentioned in the different chapters would have been extremely helpful. The unexpected gas chromatographic identification of small amounts of carbon disulfide in cooked milk (Chapter 3) and in yeast extracts (Chapter 12) would have deserved appropriate comments since neither source seems to contain likely precursors other than maybe incidental pesticide residues.

Altogether, this book is not only a useful addition to any departmental library, but also a practical tool for sulfur chemists at large regardless of their particular area of interest.

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