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A Review of: "Patai/Rappoport (Eds.), Supplement S, *The chemistry of sulphur-containing functional groups*, John Wiley & Sons, Chichester etc., 1993, ISBN 0 471 93046 6, 1122 pages, £ 320.00."

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BOOK REVIEW

Patai/Rappoport (Eds.), Supplement S, *The chemistry of sulphur-containing functional groups*, John Wiley & Sons, Chichester etc., 1993, ISBN 0 471 93046 6, 1122 pages, £ 320.00.

This book contains the following chapters:

1. T. Hoz and H. Basch, General and theoretical (sic!).
2. B. Rozsondai, Structural chemistry of organosulfur compounds.
3. F. G. Riddell, The conformational analysis of sulphur-containing rings.
4. J. F. Liebman, K. S. K. Crawford and S. W. Slayden, Thermochemistry of organosulfur compounds.
5. A. R. Bassindale and J. N. Iley, NMR and ESR of organosulfur compounds.
6. N. M. Nibbering, S. Ingemann and L. J. de Koning, Mass spectra of organosulfur compounds.
7. G. Boche, J. C. W. Lohrenz, J. Cioslowski and W. Koch, Carbon acidity resulting from sulfur substituents.
8. C. Chatgilialoglu and M. Guerra, Thiyl radicals.
9. G. Martin, Pyrolysis of organosulphur compounds.
10. J. Simonet, Electrochemical behavior of organic molecules containing sulfur.
11. M. Zielinski and M. Kanska, Syntheses and uses of isotopically labelled compounds with sulphur-containing functional groups.
12. D. P. N. Satchell and R. S. Satchell, Soft metal ion-promoted reactions of organo-sulphur compounds.
13. R. Singh and G. Whitesides, Thiol-disulphide interchange.
14. B. A. Trofimov and B. A. Shainyan, Vinyl sulfides.
15. J. Drabowicz, P. Lyzwa and M. Mikolajczyk, High-coordinated sulfur compounds.
16. A. Kalir and H. H. Kalir, Biological activity of sulfoxides and sulfones.
17. E. B. Krein, Organic sulfur in the geosphere: analysis, structures and chemical processes.

A 66 page author index and a 24 page subject index conclude this volume. The literature coverage is claimed to extend up to early 1992.

The editors have made no effort (*vide supra*) to do away with the obsolete former UK "sulphur" spelling nor have they ensured uniform spelling throughout the

book. The same is true of other terminology: "organosulfur compounds", "organic molecules containing sulfur", and "organo-sulfur compounds" are used at random.

Chapter 1 contains an extremely thorough and rich compilation and discussion of quantum chemical calculations of real and hypothetical compounds, including dimers and complexes.

Chapter 2 is its experimental counterpart with a wealth of structural data. The structures or organic metals are considered to be "beyond the scope of this chapter".

Chapter 3 gives an excellent and concise introduction to its subject.

Characteristic of Chapter 4 is its highly critical and ironic style which makes excellent reading, even for the marginally interested chemist.

Chapter 5 contains many useful tables and also treats NMR of "exotic" nuclei such as ^{17}O and ^{33}S. Only the most elusive questions will remain unanswered by this compilation.

In Chapter 6 the mass spectrometry of "classical" organosulfur compounds (thiols, sulfides, disulfides, thiocarbonyl compounds, sulfoxides, sulfones, sulfenic acids and esters, sulfinic acids and esters, and sulfonic acids and esters) is thoroughly covered.

With Chapter 7 one is briefed on the subject from a theoretical point of view (including comparisons with experimental data) and the status of the d-orbital controversy is presented: d-orbitals are unimportant for the stabilization of sulfur-containing α-anions.

Chapter 8 conveys the impression that the chemistry of thiyl radicals is mainly of academic interest and has far less practical implications than radical chemistry at large. The coverage is thorough and lucid.

The subject matter of Chapter 9 might be hard to find in other places and is summarized in a neat and thought-provoking manner. The generous provision of structural formulas makes its reading especially easy and pleasant.

J. Simonet's Chapter 10 depicts an area of rapid development (documented by the low average age of its references) and will hopefully win new proselytes for this elegant and timely methodology.

Chapter 11 is a full monography in itself and seems to cover its subject exhaustively. Practitioners of medicinal, pesticide, and environmental chemistry will find it especially useful.

The Satchells are the source of more than half the literature cited in Chapter 12 and thus this timely subject is covered with much authority. This is no doubt one of the future growth areas of synthetic methodology.

Chapter 13 strikes an excellent balance between purely chemical aspects on one side and biochemical ones on the other. Its compact format will suit the non-specialist who wishes a quick introduction to the subject.

An exhaustive overview of vinyl sulfide chemistry is offered in Chapter 14; the casual reader might have preferred a less detailed presentation. On the other hand, the vinyl sulfide aficionado will be hard put to find omissions worth mentioning. It is interesting to note that *Sulfur Reports* and *Sulfur Letters* are frequently cited source journals.

Chapter 15's review of hypervalent sulfur compounds is a tribute to J. C. Martin's

pioneering achievements in this area and easily the most up-to-date presentation available. Special emphasis is placed on the intermediacy of sulfuranes as reactive intermediates in common reactions.

Chapter 16 is a mixed bag since it is organized by chemical criteria rather than by biological pathways. Medicinal chemists will, of course, find it useful, especially in combination with Chapter 11.

A state-of-the-art presentation of the formation of organosulfur compounds in sediments, crude oil, and coal in Chapter 17 makes exciting reading, even for the non-specialist. One is intrigued by the power of contemporary chemical and physical experimentation to unravel chemical changes on the geological time scale.

The subject index is reasonably detailed and the neat typography and uniform artwork are user friendly and free of conspicuous errors.

While few readers will find all or even the majority of the chapters of primary interest this volume is a must for any self-respecting departmental or industrial chemical library.

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