

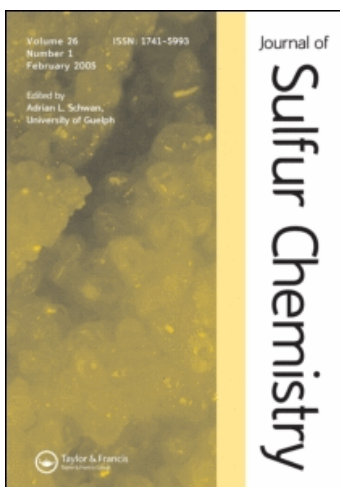
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### A review of: “An Introduction to Organosulfur Chemistry”

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## BOOK REVIEW

R. J. Cremlyn, *An Introduction to Organosulfur Chemistry*, xi + 250 pp., 1996, John Wiley & Sons Ltd., Chichester, etc., ISBN 0-471-95512-4, £ 60.00.

An introduction to organosulfur chemistry is exactly what I have been believed by colleagues to have written or to be about to write on numerous occasions on numerous continents and thus is, of course, exactly what the doctor ordered the sulfur research community for many years although the prescription could never be filled.

Thus, when a prominent member of the sulfur community volunteers where others fear to tread there is no reason to ask "do we need a book like this", but ample reason to ask "is this the book the title promises" and, of course, "is this a good book"?

The answer to question no. 2 is a resounding yes. Although the organization of this book may look somewhat unsystematic to the uninitiated it faithfully reflects contemporary thinking (and doing) in the sulfur community and thus gives a fair and balanced introduction to the chosen subject. Thus, Professor Cremlyn must be congratulated upon having filled an embarrassing void in the extant textbook literature with a neat and handy tome with a captive audience of graduate students and seasoned researchers in need of a chaperoned tour of the hypersurface called sulfur chemistry. By the same token, this book has little to offer to experienced sulfur chemists.

Professor Cremlyn's chapters appear in the order:

- 1) Structure and Bonding in Sulfur and Organosulfur Compounds
- 2) Synthesis of Organosulfur Compounds
- 3) Structure-chemical Relationships in Organosulfur Compounds
- 4) Thiols, Sulfides and Sulfenic Acids
- 5) Sulfoxides and Sulfones
- 6) Sulfonium and Oxosulfonium Salts, Sulfur Ylides and Sulfenyl Carbanions
- 7) Sulfenic Acids, Sulfonic Acids and Derivatives; Sulfenes
- 8) Thiocarbonyl Compounds

- 9) Miscellaneous Organosulfur Compounds
- 10) The Utility of Organosulfur Compounds in Organic Synthesis
- 11) Uses of Organosulfur Compounds

The eight-page subject index (there is no author index) appears reasonably detailed, the most important page numbers being highlighted by bold-face print.

The book's coverage of the literature is unsatisfactory with its total reliance on secondary sources including outdated editions of standard textbooks and handbooks with the odd obscure Ph.D. thesis thrown in. The author seems to go out of his way to misspell as many author names as possible. Thus, Voronkov is consistently misspelled Veronkov, van Tamelen appears as van Tamelin, Mayer as Meyer, Cava as Cara, Rudolf as Rudolf, Pizey as Pitzey, Bäcklund as Backlünd, and Ehrlich as Ehrich.

Many years ago I was told that pious oriental carpet weavers regard it as blasphemous to create a perfect carpet and thus put an intentional flaw in an inconspicuous place in every carpet they make in order to express their humility and fear of God without disappointing their customers. It seems that the preparation of this book's cover owes much to this venerable tradition. Three perfectly sound structure drawings from inside the book have been chosen to adorn the cover, but not without the (apparently intentional) introduction of three crude and annoying errors (this reviewer shall be pleased to point out these errors to anybody finding it difficult to locate them). Alas, somehow it must have escaped the attention of the author and the publisher that such intentional errors are supposed to appear in *inconspicuous* places.

Speaking of errors, intentional or otherwise, there are a significant number: On pp. 12–13 no mention is made of the current IUPAC rule to name HS- sulfanyl rather than mercapto, RS- (previously called organylthio) organylsulfanyl, and RSS- organyldisulfanyl. On p. 15 thiopyran is called thiapyran which will confound a naive reader trying to memorize that “thio” means replacement of *oxygen* by sulfur and “thia” replacement of *carbon* by sulfur. Also, the obsolete name sulfur monochloride is used throughout this book rather than disulfur dichloride or dichlorodisulfane. A section on nomenclature failing to quote the relevant IUPAC publications or even to mention the peculiarities of CA nomenclature as elaborated in the CA Index Guide is not doing its job. On pp. 17–18 it is claimed that heating of terminal alkynes with elemental sulfur leads to alk-1-yne-1-thiols while actually

such thiols are known to rearrange spontaneously to thioketenes. On p. 95 the thiol-sulfonates **10** mentioned in the text are incorrectly depicted by drawings of mixed anhydrides between a sulfinic and a sulfenic acid. On p. 96 sulfanyl azides are mentioned as if they were isolable compounds rather than spontaneously decomposing intermediates. The structural formula of a diazo compound on p. 113 is written as if the diazo substituted carbon atom carried a hydrogen atom as well. The author's statement on p. 155 that thiocyanogen is a gas is incorrect for all practical (synthetic) purposes. It is always generated and used in solution and decomposes when neat. In chapter 6 the subtitle "Sulfonium salts" is missing.

It is, of course, easy to mention any number of subjects deserving treatment in a text of this kind, for instance thioketenes, tetrathiafulvalenes, non-classical thiophenes, thiophene 1-oxides and 1,1-dioxides, carbon monosulfide, carbon oxysulfide, thionylamines, sulfur diimides, thiabenzene, sulfur-containing polymers, organic conductors and superconductors, etc., etc. On the other hand, one must admit that the book's brevity is a valuable asset and that the material it does contain is adequate to convey a feeling for the nuts and bolts of organosulfur chemistry.

What about question no. 3? To make a long story short the answer is yes. A free-flowing narrative, seasoned with Mr. Cremlyn's contagious sense of sulfur, and plenty of refreshingly uniform and by and large neat artwork keep the reader focused on the salient points. Anybody overseeing thesis work in organosulfur chemistry will wish to equip his students with this book to bridge the gap between the minimal treatment sulfur chemistry by necessity receives in standard textbooks of organic chemistry and the general background knowledge necessary for a junior active player in organosulfur research.

For a textbook, especially one produced in the UK, the price appears somewhat stiff.

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