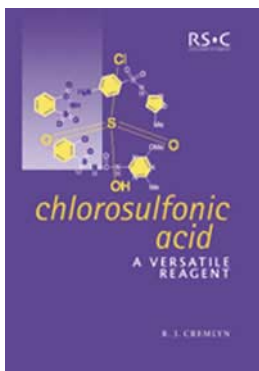


## Reaction with Distinction

Stephen J. Angyal\*



### Chlorosulfonic Acid: A Versatile Reagent

R. J. Cremlyn

Royal Society of Chemistry,  
Cambridge, U.K.

2002, 307 pp.

ISBN 0-85404-498-1

Hardcover, 105 GBP.

It is rare for a book to be published on a single chemical; this distinction has now been awarded to chlorosulfonic acid, a chemical widely used. It is ironical that this reviewer, in his 60 years of chemistry, has never used this compound—I have much to learn. There are, indeed, many applications for chlorosulfonic acid; the book contains more than 1000 references. There is an appendix which brings the references up to the end of 2001. The author is well qualified to write about this subject: More than 90 of the references are to papers published by him. Some of these may have been duplicated but this cannot be easily ascertained because the references appear at the end of each chapter and, unfortunately, there is no author index in the book.

This is not a textbook; it is a reference book. If you intend to work with chlorosulfonic acid, you should look at it to see if you can obtain further information. If you do not, you might just as well look at it in case chlorosulfonic acid turns out to be a better reagent than the one you were going to use. The book could also be regarded as a reference book on sulfonic acids and sulfonyl chlorides since most of the reactions described yield these compounds. However, chlorosulfonic acid is not only a sulfonating and chlorinating agent but has a key role in promoting several different types of reactions, such as alkylation, halogenation, rearrangement, cyclization, and polymerization, which are all described in the book.

The material in the book is organized by chapters according to the nature of the reactions. The longest chapter, of course, is on the sulfonation and chlorosulfonation of aromatic compounds (weighing in at 110 pages), then shorter ones on aliphatic and heterocyclic compounds (34 and 45 pages). There are chapters on reactions with inorganic compounds and on commercial processes to produce agrochemicals, detergents, polymers, medicinal agents, and more. There is also a chapter on the reactions of sulfonyl chlorides. The manufacture and the properties of chlorosulfonic acid is also

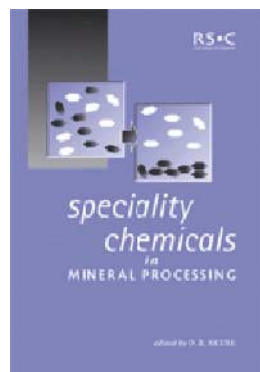
described. The mechanisms of the reactions involved are discussed in detail but there are no experimental procedures given.

It is practically impossible to produce a book without an error. I notice that the item 'Carboxylic acid anhydrides 105–108' in the subject index actually refers to anilides.

The book is well produced and printed in the usual RSC format; the style is clear and the formulae are well presented. It is unlikely that many individual chemists would buy this book but there should be a copy of it in every library that covers chemistry.

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### Specialty Chemicals in Mineral Processing

Ed. D. R. Skuse

Royal Society of Chemistry,  
Cambridge, U.K.

2002, 143 pp.

ISBN 0-85404-831-6

Hardcover, 69 GBP.

This book collates papers presented over a two-day RSC meeting at the University of Bath in June 2001. Despite its grand title, it only claims to 'highlight significant advances' for different unit operations, rather than provide a comprehensive review. Even then, it seems to be more focussed on paper and pigment applications, perhaps reflecting a European definition of 'mineral processing'.

The exception is the opening paper by Richard Hogg, which represents a good summary of the factors affecting polymer adsorption and subsequent flocculation. However, Hogg has written a number of worthy reviews of this area, and the current version adds little that's new. The remaining papers in the 'Dispersion and Flocculation' section deal only with dispersion, the most interesting being on novel reagent synthesis by atom-transfer radical polymerization and pigment dispersion technology. The latter is an excellent demonstration of how fundamental understanding of polyelectrolyte

behaviour can be used to optimise an industrial system—in this case minimizing polyacrylate consumption (and slurry viscosity) by using narrow molecular weight distributions and controlling the adsorbed conformation.

Two papers stand out in the 'Selective Processing' section. The first, by Dalton et al., describes the use of AFM and XPS in examining flocculant adsorption onto kaolinite. The work of this group on polymer adsorption studies by XPS has consistently been the most practical published, and this paper provides a good introduction. Warne et al. then discuss computer simulation of water at a kaolinite surface at different ionic strengths. The results are quite interesting, as much of the work in this area has been done on simpler substrates. However, the real challenge is to apply such work, in particular to the study of adsorption.

The final section on 'Microbiological Control' has three papers on biocides. One discusses the implications of European biocide legislation, and may be of interest to a fairly limited readership. The other two evaluate new biocides, with the main value being in their description of test methodology.

The book contains a number of papers in which reagent suppliers introduce a new product for a specific application. While useful, they are inevitably narrow in their focus and its difficult to judge if they properly appraise alternatives that exist.

The papers are generally short and a little light on detail, although most provide good reference lists for those seeking more depth. On this basis, the book is better suited to libraries rather than personal collections. Anyone after a broad introduction to modern techniques to study the impact of polymers at interfaces may be more satisfied with the 1999 'Colloid-Polymer Interactions', edited by Farinato and Dubin (ISBN 0-471-24316-7).

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