

Chlorosulfonic Acid – A Versatile Reagent. By R. J. Cremlyn; Royal Society of Chemistry: Cambridge; 2002; hardback, £105.00, ISBN 0-85404-498-1, pp 308

No craftsman is greater than the tools at his disposal. Continuous development of new and improved tools is inevitably the key to success of any craft. This is, of course, true also for synthetic chemistry. By necessity, older reagents are constantly being replaced by new and improved ones and may thus become obsolete. Some originals, however, remain useful and continues to find novel applications. Chlorosulfonic acid is such a survivor. It was discovered in 1854 and soon became of wide-spread use. Well-known to many synthetic chemists as a sulfonating and chlorosulfonating agent, chlorosulfonic acid is involved in the manufacture of several significant industrial chemicals. Sulfones and sulfonyl chlorides are for example important synthetic intermediates in the preparation of detergents, pharmaceuticals, dyes, ion-exchange resins, plastics, artificial sweeteners and more. In the laboratory, chlorosulfonic acid has found application in many diverse types of reactions, such as alkylation, halogenation, rearrangement, cyclization and polymerization, usually operating as a strong acid catalyst and efficient halogenating and dehydrating agent.

This book constitutes an extraordinarily ambitious and comprehensive coverage of the many uses of chlorosulfonic acid. The subject is outlined in a traditional and recognizable fashion, which makes it easily approachable, something that is not always the situation with all textbooks of reference character. After being introduced to the physical and chemical properties of chlorosulfonic acid in the first chapter, the second and third chapters discuss the basic mechanistic considerations of the reagent, and what type of reactions to expect with various classes of organic com-

pounds. The following three chapters, which constitute the main body of the book, deals thoroughly with the reactions of chlorosulfonic acid with aromatics, aliphatics, and heteroaromatics, respectively. Chapter 7 describes how chlorosulfonic acid reacts with various elements, e. g. S, As, Sb, Sn, and Se, as well as some inorganic compounds, such as sodium azide, nitric acid, and hydrogen peroxide. The commercial uses of chlorosulfonic acid are many, as stated above, and this is discussed in more detail in chapter 8. Miscellaneous reactions that can not be categorized as sulfonations or chlorosulfonations, some of which are mentioned in the first paragraph, are revealed in chapter 9. In the final chapter ways of preparing the reagent are described, including a section on how modern chemical plants manufacture vast amounts of this highly corrosive chemical in a safe and efficient manner.

All of the chapters are amply decorated with graphics illustrating important concepts from the text, which definitely aids the reader in his/her understanding. The book also includes an appendix entitled 'Recent References to Chlorosulfonic Acid'. To the non-expert reader, the usefulness of an appendix listing the most recent references to chlorosulfonic acid is questionable, but combined with a subject index, as it is, it may still be of some assistance.

On a final note, it is of no doubt that this is a highly recommendable book. Anyone interested in working with chlorosulfonic acid, whether it be in academia or industry, should be advised to study this book first.

Ulf M. Lindström, Lund University, Sweden.