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Book Review

Ions and Ion Pairs in Organic Reactions, Vol. 1; Edited by M. Szwarc, Wiley-Interscience, New York/London/Sydney/Toronto, vii + 399 pages, $17.95

This is the first of a two volume set designed by Professor Szwarc to demonstrate the role of ions and ion pairs in organic chemistry, and to show "how drastically different the chemistry of free ions may be from that of ion pairs". Volume 1 mostly sets the stage for this discussion, however, since it deals mainly with the physical chemistry of organic ions and ion pairs.

After a brief introduction to the concepts of ion pairs by Szwarc, there follow chapters on the following topics (authors in parentheses): Ions and Ion-Solvent Molecule Interactions in the Gas Phase (Kebarle), Spectrophotometric Studies of Ion-Pair Equilibria (Smid), Infrared and Raman Studies of Ions and Ion Pairs (Edgell), Electron Spin Resonance Studies of Ion Pairs (Sharp and Symons), Nuclear Magnetic Resonance Studies of Carbon – Lithium Bonding in Organolithium Compounds (McKeever), Nuclear Magnetic Resonance Studies of Alkali Radical Ion Pairs (deBoer and Sommerdijk), Nuclear Magnetic Resonance Studies of the Solvation of Ions and Ion Pairs (Szwarc), and Electron Spin and Nuclear Magnetic Resonance Studies of Ion Pairs – Quantitative Approach (Sommerdijk and deBoer).

For the most part, the chapters are well written and accurately review the state of knowledge in each of the subject areas. Unfortunately, this is an active field of research and already there are some sections which are incomplete due to the appearance of very recent data. It should also be noted that some chapters require more than a superficial understanding of physical chemistry. The final chapter is particularly mathematical.

The organometallic chemist will be interested in the chapters by Smid and McKeever; however, much of the other material is quite interesting and relevant to the chemistry of metal derivatives in polar media. Several chapters contain discussions of the role of solvent in the ionization process and in the determination of the properties of ionic complexes. A significant number of pages are devoted to spectroscopic studies of radical ions and ion pairs, and the text should be very useful for persons interested in this subject.

It remains to be seen how this set will be of use to the practicing organic chemist. However, Volume 1 successfully accomplishes its stated purpose and can stand alone as a significant contribution to the literature.

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