

References

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Book review

Ions and Ion Pairs in Organic Reactions, Vol. 2: Role of Ions and Ion Pairs in Chemical Reactions; edited by M. Szwarc, John Wiley & Sons, New York/London/Sydney/Toronto, 1974, xiii + 566 pages, \$28.50, £13.65.

The first volume of this two-volume set was devoted to the study of organic ions and ion pairs by physical methods (review: *J. Organometal. Chem.* 60 (1973) C46). Except for a chapter on the use of electric permittivity (dielectric constant) in probing the structure and dynamics of ion pairs in solution (E. Grunwald, S. Highsmith, and Ting-Po I), which was intended for volume 1, volume 2 deals with the effects of ion aggregation and solvation on chemical reactivities. Such effects are frequently large; "spectacular" is the word chosen by Szwarc in his preface. Before about 1960, we were ignorant of most of these effects. Today they cannot be ignored.

Three chapters treat mostly systems in which the chemistry of an anion is affected by alkali metal counterions and aprotic solvents (mainly, but not exclusively, ethers). Here the organometallic chemist will find the bulk of the material of interest. The topics are electron transfer reactions of radical anions, carbanions, and solvated electrons (M. Szwarc and J. Jagur-Grodzinski), proton transfer from carbon acids (M. Szwarc, A. Streitwieser, and P.C. Mowery), and ionic polymerization (M. Szwarc). These were chosen because they involve important fundamental reaction steps (electron transfer, proton transfer, and addition of carbanions to carbon-carbon double bonds), because the effects of ion aggregation and solvation are pronounced, and because they have been the subjects of intense recent study.

Another chapter covers solvolytic nucleophilic aliphatic substitution (D.J. Raber, J.M. Harris, and P. v. R. Schleyer), concentrating on the putative dynamic roles of ion pairs. The cornerstones of this area were laid by the late Saul Winstein, to the memory of whom this volume is dedicated.

Of the approximately 1200 citations of literature, about 80% refer to works published in or after 1960, 60% in or after 1965, and 25% in or after 1970. A quick scan revealed only two citations (0.2%) of the *Journal of Organometallic Chemistry*.

Should a reader of this journal be interested in this book? Not if he hopes to find in it any chemistry of organometallic systems other than ionic organoalkalines. And not if he hopes to find compendia of examples in which

the choice of metal counterion or solvent facilitates syntheses. It isn't that kind of book. It is a critical review of the physical and physical-organic chemistry of the areas it covers. It seems likely that many of the fundamental principles governing ionic organoalkalies and their interactions with solvents will be transferable to other organometallic systems. For this reason, the three chapters (316 pages) dealing with organoalkalies should be of great interest to organometallic chemists.

All the chapters are excellent in coverage and exposition.

This two-volume set is both unique and timely. Much of the material treated is not otherwise available in collected form, and nowhere else can one find such important but seemingly diverse topics organized around the common theme of the role of ion pairs in chemistry.

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