

Book Reviews

Carbanions, Living Polymers and Electron Transfer Processes. By MICHAEL SZWARC, F.R.S., State University of New York Polymer Research Center at the College of Forestry, Syracuse, N. Y. Interscience Publishers, John Wiley and Sons, Inc., 605 Third Ave., New York, N. Y. 1968. xvi + 695 pp. 16 × 23.5 cm. \$27.50.

In these days of multiple authorship, it is rewarding to find a comprehensive monograph by a single author summarizing a field (or, in this case a group of closely related fields) to which he has been a major contributor and to which he brings a unique and personal point of view.

Professor Szwarc's monograph is such a book, and illustrates further that polymer chemistry is not only an interdisciplinary subject, drawing on a number of fields, but may also provide powerful insight into them. As such, it deserves study, not only by polymer chemists, but by anyone concerned with phenomena involving carbanions, ion pairs, or electron transfer.

Starting with a succinct introduction to polymer chemistry, the book next discusses the properties and uses of living polymers and their thermodynamics, followed by a meticulous discussion of experimental techniques which should be of interest to anyone concerned with the quantitative study of air- and moisture-sensitive materials. Polymer chemistry, *per se*, is then left for two chapters which take up in detail ion-pair phenomena in relatively poor ionizing solvents and electron transfer processes, both topics to

which Szwarc has made important contributions and which have wide application outside of polymer chemistry.

With this background the book then returns to the propagation process in ionic polymerization, the peculiar properties of systems involving lithium counterions and kinetics and actual rate constants in ionic polymerization. It then closes with three chapters on Leuchs' anhydrides (apparently still a complex and controversial subject), helical polymerization (rather speculative), and termination processes in polymerization reactions.

When one realizes that "living polymers" were first clearly demonstrated by Szwarc in 1956 and that most of our knowledge about them comes from the work of his group, this monograph is even more impressive. Other workers may not agree with all of the conclusions, since Szwarc takes definite positions on many questions where the data of different groups have disagreed. However, I certainly can take no exception to his comment on page 13 that subsequent developments have belied a statement I made in 1950 that (of the three types radical, cation, and carbonium ion) carbanionic polymerization seems to be the most limited in scope, and I appreciate the relish with which he points it out.

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