

BOOKS

Macromolecules, Vol. 2: Synthesis and Materials, Hans-Georg Elias, Plenum Publishing Corporation, New York, 1977. 1131 + LXXIV pages. price: \$39.50.

This is the second part of the two volume treatise on Macromolecules of H-G. Elias. While the first part covers Structure and Properties, this second one discusses Synthesis and Materials and, specifically, treats principles and classification of polymerization reactions, polycondensation, ionic polymerization, polyinsertion (Ziegler-Natta polymerization, enzymatic polymerization), free radical polymerization, photopolymerization, copolymerization and reactions of macromolecules. Subsequently, the Author discusses the synthesis of the most common and industrially important polymers from polyolefins to polyacrylics, polyethers, polyesters, polyamides, polynucleotides, protein and polysaccharides.

The discussion is at the advanced undergraduate and beginning graduate level. Only elementary knowledge of organic, inorganic and physical chemistry is necessary. Mathematical derivations are kept to a minimum, while the chemical aspects of the polymerization is emphasized.

The book's strong point is the integration of the chemistry into the kinetics of polymerization reactions. Unfortunately the treatment of the structure of polymers before that of their synthesis and polymerization kinetics, as followed by the Author, does not permit a complete and more direct coupling between physical chemistry, kinetics, molecular structure and molecular aggregates in polymers (mor-

phology). The present book, while covering these aspects less deeply than other textbooks, is more broad in scope and contains more material than many other textbooks now available on this subject. A drawback of the book when used as a classroom text is the lack of problem sets and the tendency not to articulate concepts through problems. The volume will be most useful as a self-study textbook; it contains an excellent set of references where detailed treatment of many concepts may be found.

In sum, the volume represents a valuable addition to the already long list of textbooks in macromolecular science that have appeared in recent years.

GIUSEPPE PARRAVANO
Professor
University of Michigan

Measurements in Heat Transfer, second edition, E. R. G. Eckert and R. J. Goldstein (editors), McGraw-Hill Book Co., New York, 1976. 656 pages. price: \$29.95.

This book, which is the second edition of the well known book, *Measurement Techniques in Heat Transfer*, originally published in 1970, is a review of measurement techniques and instrumentation in experimental heat transfer. This reviewer has found the book to be both useful and understandable with respect to experimental measurement techniques.

Individual chapters are authored by acknowledged experts in their areas of research and this provides for very in-depth coverage. However, there is some repetition in descriptions of tem-

perature scales which is no doubt attributable to this multiple authorship. There are more typographical errors in the book than one might expect in a second edition. A major change in the second edition is the replacement of the original three-part Chapter 2 on temperature measurement by two separate chapters; Chapter 2, which describes platinum resistance thermometry, and Chapter 3, which deals with thermocouple measurements. This change does not significantly alter the coverage of these topics. The new edition has added an appendix on the International Practical Temperature Scale of 1968.

Chapter 1 deals with estimation of errors in temperature measurement, particularly with regard to thermocouples. Temperature measurement using platinum resistance thermometry, thermocouples, and optical techniques is considered in Chapters 2 through 5. Chapters 6 and 7 discuss spectroscopic and other techniques for temperature measurement in high temperature gases and plasmas. Transient methods for estimating surface heat flux is the topic of Chapter 8. Experimental applications of the analogy between heat and mass transfer by convection are mentioned in Chapter 9. Chapter 10 is concerned with measurements of thermal radiation. Measurement techniques for physical properties important for heat transfer are described in Chapters 11 and 12. Chapters 13 and 14 are devoted to velocity measurements using laser-Doppler and cooled film anemometry.

The extensive reference lists at the end of each chapter are a definite as-