

Man-Made Fibers—Science and Technology, Vol. III, H. F. Mark, S. M. Atlas, and E. Cernia, Eds., Interscience, New York, 1968.

Volume III in the series *Man-Made Fibers* completes the review of the science and technology of important man-made fibers. Volume I of this series concentrated on the technology of spinning man-made fibers and on the physical control of fiber structure. Volume II initiated the review of important man-made fibers, emphasizing first cellulose and second, nylons.

In volume III, then, the series is completed by three chapters on polyester fibers; one each on acrylic, modacrylic, polyvinyl alcohol, polyvinylidene chloride, polyvinyl chloride, linear polyolefins, and spandex or elastomeric fibers; and three chapters on inorganic fibers, covering glass, metal organic materials, and metals. In addition, there are two chapters on finishing and dyeing of man-made fibers by E. I. Valko of the Massachusetts Institute of Technology. The chapter on dyeing is a brilliant review of the science underlying this age-old art. The final chapter is a review of fiber testing techniques and data interpretation as applied to man-made fibers.

This volume in particular, and the series as a whole, is designed for use by the practitioner in the art and science of polymers and fibers, whether academic research worker or industrial scientist. This series is a must, whether for personal or institutional libraries, for the above researcher and those indirectly involved in this field. In particular, the expert in one part of this field who wants to know more about the other parts will find the series very helpful. As text or reference book it perhaps has lesser value owing to some of the inherent limitations of this style of scientific and technical reporting.

Treatises written by a series of authors tend to be variable in quality and style unless the editors impose rigorous standards and carry out considerable rewriting. It is clear in this volume that extensive editing was not done. In addition, applied research is poorly reported in the literature and industrial writers tend to be limited in their sources of information concerning other companies' efforts or work done in other countries. Unfortunately, many of the foreign industrial authors are not fully informed on American industrial developments. Specific examples of some of the limitations will be pointed out below.

The value of this kind of book is time limited, in the sense that science and technology are a constantly changing arena. Unfortunately, there is so much time lost between the writing of the manuscript, its editing, incorporation, and publication in a final volume that the book is out of date upon publication. A number of the chapters are obviously dated and do not cover recent work published in this field. Most of the chapters have no more recent references than 1966, which would indicate that the manuscripts were prepared early in 1967. There appears to be at least a two-year lag between the preparation of the manuscript and its final publication. Fortunately, the man-made fiber field is now near the end of its rapid period of development and is not changing as fast as some other fields in science and technology.

Polyester fibers are covered in three chapters. The first, "Homopolymers," by Hillier of ICI, is limited primarily to the earlier European developments of polyester fibers. The second chapter, by Morimoto, "Copolymers," covers the more recent work primarily from the point of view of Japanese developments. Morimoto's exact information concerning the American developments in polyester fibers is somewhat limited; for example, he describes the Mitsubishi work with the Chemstrand Fiber K process and makes the assumption that the American development by Monsanto of Blue-C polyester fiber is of the same type—a limitation which does not recognize continuing development in the field of man-made fibers. Finally, the third chapter, by Martin and Kibler, although covering some of the American developments, is still primarily limited to the work of Eastman Kodak with Kodel.

An example of poor editing occurs in the fact that titles to the chapters by Hillier and Morimoto contain no reference to polyethylene terephthalate or even to polyester fibers.

Rather, the titles "Homopolymers" and "Copolymers" are much too broad for the subject matter of these chapters. Clearly, these were meant to be subheadings under the general title of "Polyester Fibers." Better editing may have made this point clearer.

The chapter on "Acrylic Fibers," written by one of the editors, E. Cernia, while covering major developments in the field, has a considerable number of limitations and errors. For example, on pp. 136 and 137, the trade name for the Monsanto Company acrylic fiber (Acrilan) is misspelled, which is hardly excusable for an expert in the field. On p. 168, the heading for Section III, "The Properties of Acrylonitrile," should be "The Properties of *Polyacrylonitrile*," not of the monomer acrylonitrile. On p. 173, Table XXV gives an incomplete listing of producers and trademarks concerning acrylic fibers. If such a table is to be presented, it should be exhaustive; otherwise, it may mislead the reader.

These items came to the attention of the reviewer because of his personal knowledge of the subject matter. How many other errors of a similar nature occur is unknown. Moreover, they detract from the use of this book as a reference text.

The chapter on polyvinyl alcohol fibers, written by Osugi, is an excellent review of the Japanese developments, which have been the leading ones in this field. However, here again, American work impinging on the structure and properties of polyvinyl alcohols was ignored.

Similarly, the chapter on metallic fibers in textiles by Ernst of Switzerland is limited only to metal fibers made from plastic-coated slit film, used largely today for decorative purposes. Recent work on the bundle drawing of steel fibers for textile use is completely ignored, which is another example of the limitation of the foreign technologists' knowledge of the more rapidly advancing phases of American technology.

The shortcomings mentioned do limit the usefulness of this volume as a standard reference in the field. However, being aware of this, the user will nevertheless find this volume extremely valuable for a better understanding of man-made fibers. The two chapters by Valko alone make the book worthwhile in their clear demonstration of the science underlying the art of dyeing and finishing of textiles.

Herbert N. Friedlander

Chemstrand Research Center, Inc.
Durham, North Carolina