

## Book Reviews

### Chemistry of Natural Protein Fibres

(Ed. R. S. Asquith)

Wiley, New York—London, 1977, £20.00/\$38.00

The pioneering work of Astbury and Speakman in the 1930s, which first stimulated interest in the structure and chemistry of protein fibres, was followed by two decades of great innovation in the methodology of protein chemistry. During this period Martin, Syngé, Tiselius, Sanger, Moore, Stein, Edman and others introduced a battery of powerful new techniques that enabled chemists to characterize a large number of proteins in terms of molecular weight, composition and primary structure. When such methods were applied to protein fibres the results achieved were not so spectacular as those in enzymology, but steady progress over the years has revealed the enormous structural complexity of wool, for example, in terms of its constituent proteins and their morphological significance. Despite this complexity some of these proteins have been isolated and their primary structures determined.

Progress on structural problems has been accompanied by advances in the chemical technique used by the dyer and finisher for improving the aesthetics and performance of wool textiles. Inevitably, much of the work published in all these fields has been reviewed from time to time, but there has been no previous attempt to bring all the chemistry, fundamental and applied, into a single volume. The 'Chemistry of Natural Protein Fibres' remedies this deficiency in a most satisfactory way.

The book comprises nine chapters: the basis of protein chemistry; the chemistry and reactivity of silk; the histology of keratin fibres; the chemical composition and structure of wool; chemical reactions of keratin fibres; the dyeing of wool; the chemistry of wool finishing; other animal fibres. The editor, Raymond Asquith, has been fortunate in persuading a group of experts, well-known for their breadth of knowledge and expertise in some particular aspect of fibrous protein chemistry, to write these chapters. The opening chapter, a lucid account of basic protein chemistry, compressed into 41 pages of text with a bibliography of 345 references,

sets the tone for the book. In succeeding chapters the differences in style and presentation, and the personal preferences and idiosyncracies of their authors add to rather than detract from, the attractiveness of the book.

I am sure that this book will fulfil its editor's hopes, and will serve as a guide, philosopher and friend to many graduates embarking on research in protein fibre chemistry. As such it is to be recommended, and it should also prove most useful as a teaching aid. It should be pointed out, however, that it suffers from one serious defect; the scientific and technical literature surveyed does not go beyond 1974.

The book has been well edited, and meticulous care taken to change the basic English spelling used by the authors to basic American. There are commendably few errors and these are all of a trivial kind. An amusing one is the picture of what must be the fattest Merino wool fibre ever grown on a sheep (page 82), others, not so amusing, are the misquotes of A. J. P. Martin's initials, which are given as 'R. B.' in Reference 5 on page 258, and 'A. T. P.' in Reference 184 on page 262.

A. Robson

### Polymer Syntheses, Vol. 2

Stanley R. Sandler and Wolf Karo  
Academic Press, New York, 1977,  
400 pp, £28. 05

This book is the second of a three-volume series by the same authors which together constitute one volume of a series on various aspects of organic chemistry. Volume 1 (reviewed in *Polymer* 1975 16 392) covered many of the syntheses of classical linear polymers. The current volume contains chapters on urea, melamine, phenol-aldehyde resins, epoxy, silicone and alkyl resins followed by four chapters on vinyl polymers: viz., poly(vinyl ethers), poly(*N*-vinyl pyrrolidone), acrylic and methacrylic acid polymers and poly(vinyl chloride). Each chapter commences with a general discussion of the topic area followed by examples of synthetic procedures including, in some cases, syntheses of low molecular weight starting compounds used in resin formation.

Virtually all recipes quoted are taken from the patent literature and many describe preparations on a scale larger than could be conveniently performed in non-industrial laboratories. In the absence of information to the contrary it must be assumed that these preparations have not been tested by the authors. The examples given may be divided into two categories. Some illustrate preparations of resins, adhesives, moulding resins, baking enamels or coating resins. Others illustrate the use of different techniques and initiators to produce polymer from a given monomer; the chapter on vinyl chloride includes examples of bulk, suspension, emulsion and solution polymerizations. In some cases, variations on basic recipes are tabulated. Most preparations quote expected yields and, sometimes, give some idea of the molecular weights of the products. In general, the syntheses do not lead to well-characterized products which can be used as standard polymers for subsequent study.

Two authors cannot be fully conversant with the total subject area of these volumes. Also, the current level of understanding relevant to individual chapters is different. These facts combine to give the presentation of the whole volume, and the contents of some individual chapters, an unbalanced appearance. Thus, the chapter on acrylic acid and related compounds gives a detailed discussion of monomer purification, including the description of a column packing, but the discussion of factors influencing polymerization processes is vague. The treatment is essentially technological and the scientific discussion is inadequate and sometimes misleading. Where scientific details are given they cannot be relied on for accuracy.

An interesting aspect of this book stems from current safety legislation. Most chapters mention hazards and some give detailed descriptions of precautions to be taken when handling certain materials, e.g. vinyl chloride.

Overall, this book provides a source of factual references on a variety of topics. It is perhaps most useful to workers experienced in some areas of polymer science who require general information on other areas. It is not suitable for undergraduates who would not have the experience to judge its strengths and weaknesses.

G. C. Eastman

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