Book Reviews

Chemistry of Natural Protein Fibres

(Ed. R. S. Asquith)
Wiley, New York—London, 1977, pp 438, £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, Synge, 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 dying 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 Ameri can. 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

Liquid Chromatography of Polymers and Related Materials (Chromatography Science Series Vol. 8)

(Edited by Jack Cazes)
Marcel Dekker, New York—Basel, 1977, pp. 192, SFr 65

This book contains thirteen papers presented at a Symposium held at Houston, Texas in October 1976. Despite the title, only two papers, one on reverse phase gradient elution chromatography for water-borne impurities and one on preparative adsorption chromatography for liquid crystals, are concerned with separations not involving size exclusion. Most of the book describes work on size separations by gel permeation chromatography (g.p.c.), and two further papers, one on epoxy resins and one on wood products, illustrate the extra information that may be obtained by a combination of g.p.c. and liquid chromatography techniques.

The major g.p.c. advance in the last five years has been the development of microparticulate packings for high speed and high resolution separations of polymers. The errors that may arise in calibration and data processing in high speed separations are well discussed in a paper by Kohn and Ashcraft who investigate procedures for accurate molecular weight determinations. Microparticulate silica packings are attractive because they may be used with a range of eluents, both aqueous and organic, and the paper by Vivilecchia and coworkers provides details of these packings and examples of polymer separations. Two further papers are concerned with the development of the g.p.c. technique, one on solution viscosity measurements by g.p.c. (Hellman) and the other on hexafluoroisopropanol as g.p.c. solvent at ambient temperature for polar polymers such as polyamides and polyesters (Drott). Further papers of interest to the high polymer chemist are on the characterization of poly(methyl methacrylate) polymers and copolymers by low-angle laser light scattering, g.p.c. and viscometry, on aggregation of poly(vinyl chloride) in g.p.c. solvents, and on the determination of long-chain branching by g.p.c. which is presented as a comprehensive list of published papers.

Several papers on separations of small molecules and low polymers were mentioned in the first paragraph. There is a second g.p.c. paper on epoxy resins, showing how the size distribution is related to reaction conditions. The paper by Ambler and Mate illustrates problems which may arise in using universal calibration procedures in g.p.c. separations of oligomers.

G.p.c. users will be interested in many of the papers in this volume. The book should be bought by libraries serving polymer laboratories. The price is likely to deter g.p.c. practitioners from buying personal copies.

J. V. Dawkins

ERRATA

Book Review of 'Dielectric Spectroscopy of Polymers' Polymer 1977, **18**, 1297.
For author's name
read P. Hedvig
We apologize for this error.

'Molecular Science behaviour in polymeric reagents' *Polymer* 1978, **19**, 163.
Page 167, *Effect of particle size.*
The last two lines should *read*:
'The average ratio of total external geometric surface areas for these samples is ~2.'
Page 170, left hand column, 11 lines from the bottom, *read*:
'then initial rates should be an inverse linear function of particle diameters. In this instance decreasing the particle size by a factor of 2 increased the rate by only ~1.4.'
The authors apologize for this error which has come to light during further work on this subject. It does not, however, influence the conclusions drawn, nor the detailed discussion.

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