countered but this does not detract from the generally high standard maintained throughout. The overall impression is of a fascinating and extensive compilation of synthetic routes based on the interfacial technique and of an area of technology that is of strictly limited value in the large scale commercial production of polymers but of considerable potential in a growing number of relatively small scale speciality applications.

B. J. Tighe

Chromatography of synthetic and biological polymers. Volume 1 Column Packing, GPC, GF and Gradient Elution

Edited by Roger Epton
Wiley, London and New York, 1978, pp. 386, £18

The book is the first volume of a two volume set devoted to chromatographic methods of separation of both synthetic and naturally occurring polymers. The Chapters are based on lectures given at a Chemical Society Symposium held at the University of Birmingham, UK in July 1976. The conference organizers have rather ambitiously attempted to combine the chromatography of synthetic and biological polymers. In the introduction it is argued that the two techniques have followed parallel, though separate, developments, with the implication that their joint consideration and comparison will lead to a useful cross-fertilisation of ideas. I am not concerned that this is the case, because of the very large differences between, on the one hand, the weakly polar or non-polar synthetic polymers, soluble in organic solvents and the extremely polar and often ionized biological polymers, which are almost invariably soluble only in aqueous media. This is reflected in the papers themselves, of which only two out of twenty eight are concerned with both fields. I believe that this volume will nevertheless be of great appeal to the two groups of readers.

Volume 1 is divided into three parts. Part I gives a very comprehensive account of the column packings used for exclusion chromatography. This section is the most useful one in the book, giving a lot of information not reviewed elsewhere. It gives a much more complete and balanced account of the subject than is usually to be found in conference proceedings, and is further coordinated by a brief but helpful introduction by the editor. Chapter 2, by Dawkins, gives a good account of the inorganic packings available for the g.p.c. of synthetic polymers, including details of the commercially available packings and information about their properties and performance. Chapters 4 and 5 are concerned with the poly(acrylolyl morphaline) Enzacryl and poly(hydroxethyl methacrylate) Spheron gels respectively, both of which can be used with both aqueous and organic solvents. In fact, it is in the preparations of gels for size exclusion chromatography that there appears to be most common ground between the biological and synthetic polymer areas.

Part II, the shortest of the three sections is concerned with preparative and industrial scale chromatography. Chapter 12 is concerned with scaling up of g.p.c., Chapter 13 describes preparative scale fractionations by continuous flow chromatography, and Chapter 14 is concerned with column fractionation by gradient elution, employing both solvent composition and thermal gradients.

The final section of the book contains fourteen shorter contributions on the applications, theory and techniques of gel filtration and gel permeation chromatography. The papers show the usual variety to be found in contributions at scientific conferences, each one being of relevance to a limited number of specialists. However, this section serves a very useful purpose, since it gives a good indication of the current areas of what is for many workers a research tool, and therefore puts into perspective the more technique oriented first part of the book. Most people involved in the area should find something of interest in this part. Papers on synthetic polymers include the use of whole polymer reference materials for analytical g.p.c., measurement of chain branching in low density polyethylene, and the measurement of lamellar thickness in chain extended polyethylene. A paper by Booth and coworkers describes the use of g.p.c. to study the size and size distribution of micelles of synthetic block copolymers in solvents selectively bad for one of the polymeric components. There are also short papers on specific aspects of porous silica columns, including their use for aqueous g.p.c., studies by gel filtration of milk proteins and the purification of protected polypeptides by g.p.c.

In summary, this volume gives a good account of the present state of chromatography on the bais of molecular size of both synthetic and biological molecules. It contains much information not available in any other book, and is strongly recommended for anybody with an interest in the fractionation of either synthetic or biological polymers.

A. V. Cunliffe

ERRATUM

Ashok C. Shah, Ian Holdaway, Ian W. Parsons and Robert N. Haward, *Polymer*, 1978, **19**, 1067.
The title should *read*:

Studies of dimethacrylates as crosslinkers for styrene

The publishers apologize for this error.