

## *Book Review*

### **High-Performance Liquid Chromatography — Advances and Perspectives.**

Vol. 3, edited by C. S. Horváth. Academic Press, New York, 1983, ISBN 0-12-312203-1, ISSN 0270-8531.

This latest volume continues the high standard set by its predecessors in the series, combining authoritative reviews of recent advances in HPLC with comprehensive surveys of the background and fundamental theory of the technique. Following the widespread application of HPLC (in particular reversed-phase separations) to pharmaceutical analysis, has come an expansion into the life sciences with applications in the separation of biopolymers. This area is reflected by the first three reviews in this volume, which cover the separation of nucleic acids, proteins and peptides. The final chapter is more fundamental and discusses the physicochemical basis of separations using liquid-solid chromatography.

The first chapter, by H. A. Scoble and P. R. Brown, looks at the application of reversed-phase liquid chromatography to the separation of nucleic acid fragments. As well as discussing the mechanism of separations and the effects of the mobile phase, including ion-pairing techniques, the review covers methods of sample preparation and the identification of peaks by comparison methods and spectroscopic detectors. The chapter ends with a review of applications in metabolite profiling, the examination of DNA and RNA hydrolysates, enzyme assays and the study of oligonucleotides.

The second chapter, by W. S. Hancock and J. T. Sparrow, reviews recent work on the separation of proteins by reversed-phase HPLC. After considering the specific problems associated with the separation of proteins, the separation mechanism and reversed-phase columns, the authors discuss the mobile phase and its effect on separations. The last section examines the use of ion-pairing reagents in the separation of proteins and presents some typical separations.

This review is complemented by the next chapter, by M. T. W. Hearn, which covers HPLC of peptides. Most of the discussion deals with the use of chemically bonded reversed phases and the effects of different eluent conditions; a section on diastereoisomeric separations of peptides is also included. These methods are compared with separations by gel permeation, ion-exchange and polar adsorption HPLC.

These three chapters provide a well-rounded survey of the biopolymer field but, except for a few references added in proof, only cover work up to 1981 and thus do not include much of the work on wide pore columns or other recent developments.

The last chapter is a comprehensive review by L. R. Snyder of his fundamental studies of mobile-phase effects in liquid-solid chromatography. In this survey he includes not only silica and alumina but also polar (e.g. diol and cyano) bonded phases. The first part discusses the theory of the displacement model, solvent selectivity and interactions between the solvent and solute, and the second part looks at the experimental results and tests them against the theoretical models. The chapter ends with a discussion of the application of these correlations to strategies for mobile phase optimization.

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