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Book Review

Developments in chromatography — 1, edited by C. E. H. Knapman, Applied Science Publ., London, 1978, IX + 245 pp., 16 tables, 50 figs., price US\$ 30.00, ISBN 0-85334-748-4.

The recent and rapid increase in overall performance of almost all forms of chromatography has made it increasingly difficult for workers in any one field to maintain an up-to-date awareness of developments in any other. In consequence, there has been an increasing need for a book or a series of books which review the major areas of development in chromatography. *Developments in Chromatography—1*, from its title the first volume of a series, appears to have been designed to fill such a need. Appearing as it does in the wake of a spate of books dealing with almost all aspects of high-performance liquid chromatography this book wisely avoids that topic and deals largely with gas chromatographic advances.

The first chapter is an ideal start to the series in that it concerns a basic parameter, solvent-solute interactions. The basic interactions and the approaches toward their evaluation are described together with the more recent work of Rohrschneider and McReynolds. The use of gas chromatography to determine thermodynamic parameters and the converse classification of stationary phases by thermodynamic properties are reviewed and the chapter closes with a discussion of the special selectivities observed for several of the newer types of stationary phase.

The second gas chromatographic chapter, third in the book, is concerned with the separation of isomers. In the absence of any general theories on the subject the review is limited to a range of published applications which use structure selective techniques such as liquid crystal and Bentonite packings, resolution of optical isomers by diastereoisomer formation or the use of chiral stationary phases and gas-solid chromatography. The difficulty with such a task is that the danger exists of such a review becoming merely a list of recipes. While the author does not entirely avoid the pitfall, a large enough range of subjects have been chosen to show what is possible with the technique.

The final chapter concerned exclusively with gas chromatography deals with detectors, describing the theory and operation of each of the main types. The author expressly declines to produce any comparison between them and also does not discuss in detail previous attempts to do this. This is an omission to be regretted because it is difficult from the data presented in each section of the chapter to come to conclusions as to which detector might be most suited to a particular application. The author rightly avoids repetition of much data concerning thermal conductivity and flame ionisation detectors but his coverage of the quantitative aspects of the other, specific, detectors is unfortunately too sparse.

The only chapter dealing exclusively with a liquid chromatographic technique is a useful and comprehensive review on the determination of molecular-weight

distributions from gel permeation chromatography. The chapter covers column calibrations and corrections for band spreading as well as practical aspects.

There are two chapters which deal with both gas and liquid chromatographic techniques. Work which crosses the artificial boundaries which have sprung up between techniques is to be welcomed and these contributions are no exception. The earlier chapter concerns continuous chromatographic refining and should be required reading for anyone with an inventive turn of mind, a good workshop and large amounts of sample to purify. This chapter is written with a strong bias toward chemical engineering aspects in a laudable attempt to gain acceptance for the technique in process systems but which makes it sit uneasily with the other contents of the book. The final chapter describes the use of all chromatographic modes in the forensic science laboratory. Although this review never quite comes to grip with its potential but tends to degenerate into lists of published applications it is, at least, comprehensive. It fails in that the applications are presented separately for each technique, not always with any detail and frequently without critical assessment. Although it shows very clearly the vast number and range of forensic samples which have been analysed it fails to compare and contrast the methods which have been developed for similar applications using different techniques. Such discussion would have rendered the chapter of use and interest to readers other than forensic scientists.

Taken overall this first volume is a welcome addition to the existing chromatographic literature and augurs well for the remainder of the *Developments in Chromatography* series. Although parts of the book would hardly make bedtime reading the majority is well written and can be recommended for the non-specialist chromatographer who requires either a broad general knowledge of work in other fields of chromatography or a basis for further study of any one technique.

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