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Book Review

Quantitative column liquid chromatography: a survey of chemometric methods (Journal of Chromatography Library, Vol. 29), by S. T. Balke, Elsevier, Amsterdam, Oxford, New York, Tokyo, 1984, XIV + 299 pp., price Dfl. 165.00, ISBN 0-444-42393-1.

As the interest in more accurate and precise liquid chromatographic methods grows, the various mathematical and statistical procedures become of greater importance. The aim of this book is to review these methods. The title of the book is perhaps not comprehensive enough, as it does not only deal with quantitative analysis, but tries to cover the whole of liquid chromatography.

Chapter 1 is mainly introductory, but some confusion could have been avoided by not using the term "fractionation" where "separation" is the more usual term and "calibration" is not synonymous with "correlation of retention behaviour with chemical structure". New terms should not be used if the old terms are commonly accepted, so as to avoid confusion of the reader.

Chapter 2 deals with some chemometric methods. The part devoted to regression is of importance; the author warns of linearization of non-linear relationships and recommends the use of non-linear regression. Also of importance is the section on the error propagation theory. Contrary to what one would expect from the book's title, there are only two pages dealing with pattern recognition.

Chapter 3 is devoted to some aspects of the separation process. In the first part peak shape analysis and resolution assessment are discussed. The second part of the chapter explains the principles of separation optimization.

Various aspects of detection form Chapter 4. Valuable discussions of important questions, such as peak height *versus* area, internal *versus* external standards, are included. Very much up to date are the pages describing rapid scan spectrophotometers and molecular weight identification in size exclusion chromatography (SEC).

Chapter 5 although called "calibration" is mainly devoted to SEC. Dependence of retention volume on molecular weight is discussed together with the influence of system conditions.

Chapter 6 considers methods for resolution correction. It correctly criticizes the geometrical resolution methods used in many integrators. Instead, the author suggests modern methods such as curve fitting, accumulated detector response and deconvolution. A FORTRAN program for fitting the Gaussian curve to experimental chromatograms by Simplex search is added.

A synopsis of the most important facts and conclusions is given at the end of each chapter, which is especially useful for the novice in the field.

To reassume: a relatively great part of the book deals with SEC (limited only to synthetic polymers). Analysis of small molecules is limited to reversed-phase high-performance liquid chromatography.

The emphasis on practical problems, which is the main quality of the book, prevails over its several gaps and limitations. On the whole, it can be recommended to a chromatographer wishing to apply correctly the modern mathematical methods to his work.

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