

Book review

Practical HPLC Method Development, by Lloyd R. Snyder, Joseph J. Kirkland, and Joseph L. Glajch, John Wiley and Sons, Inc., London, 1997, 765 pages, \$84.95, ISBN: 0-471-00703-X

This is the second edition of the classic book (first published in 1988), where the authors sought to provide a comprehensive and systematic approach to the development of HPLC methods. The new edition has been greatly expanded to include advancements made since publication of the first edition, and they have succeeded in producing the most exhaustive and concise compilation of information appropriate to chromatographers. Without a doubt, this volume would represent the most important addition which a separations scientist could make to his/her library.

The book has been organized into 15 chapters, which begin with introductory activities, and which end with completion of methods and their transfer. Chapter 1 provides an introduction to the art of method development, and sets the foundation required for complete grasp of the following chapters. Chapter 2 reviews the basics of separation by HPLC, discussing how resolution is a function of method conditions and various sample-size effects. Chapter 3 provides a discussion of the types of detectors available, and these compare in terms of sensitivity and selectivity.

Chapter 4 contains the all-important discussion of sample preparation. The authors devote almost 75 pages to this topic, covering preliminary processing and pretreatment of samples, extraction of

analytes from their matrices, and derivatization reactions. Chapter 5 provides an overview of HPLC columns, including their design, specifications, column care, and troubleshooting. The section entitled 'Why Do Columns Die?', is most informative, and provides numerous suggestions as to how column life may be prolonged. In Chapter 6, the authors discuss the practice of HPLC as applied to non-ionic samples, covering both reversed-phase as well as normal-phase chromatography. Chapter 7 contains an analogous exposition of the HPLC analysis of ionic samples, treating reversed-phase, ion-pair, and ion-exchange chromatography. These are followed by Chapter 8, which covers the particular requirements of developing and using gradient elution in HPLC analysis.

Perhaps the most useful chapter in the entire book is Chapter 9, which deals with a systematic approach for the separation of most commonly-encountered samples by reversed-phase HPLC. The authors have provided important guiding principles, and many practical recommendations for getting started and ultimately completing the development of an isocratic method. Chapter 10 provides a look at computer-assisted method development, pointing out both the advantages and disadvantages of this approach. Chapter 10 deals with the use of computer programs that can facilitate HPLC method development, covering the commercially available programs which use introductory experiments to deduce computer predictions of separation as a function of method conditions.

Chapters 11 through 13 provide information related to more specialized applications of HPLC, covering biochemical samples (proteins, nucleic acids, carbohydrates, etc.), chiral separations, and preparative HPLC, respectively. The chapter dealing with chiral chromatography is very extensive, and represents an excellent coverage of the topic. The various methods used to quantitative interpretation of HPLC data are treated in Chapter 14, including methods appropriate for trace analysis. The final chapter in the book deals with the validation and transfer of HPLC methods, and provides concise explanations of the various analytical performance parameters which need to be determined.

One very useful feature of this volume are the six appendices which complete the book. These provide additional information on plate number and resolution, solvent properties, relation of molecular structure and resolution, preparation of buffered mobile phases, ranking of reversed-

phase columns from different suppliers, and mobile phase water content for normal-phase HPLC.

By collecting as much vital information that can be contained in a single volume, the authors have achieved a superior information package that would benefit any worker in the field. This edition is certainly current, and given the mature state of HPLC analysis, should remain so for the foreseeable future. Owing to its breath of coverage, the book would also make an ideal textbook in a HPLC methodology course. There is no doubt that the new edition of this book must be acquired by all practicing chromatographers, and anyone else who has aspirations in the area.

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