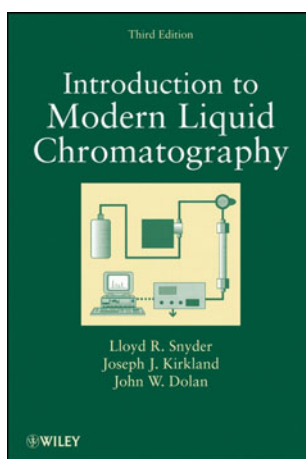


Lloyd R. Snyder, Joseph J. Kirkland, John W. Dolan: Introduction to modern liquid chromatography, 3rd ed.

Catherine A. Rimmer

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Bibliography

Introduction to modern liquid chromatography, 3rd ed.
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valuable, liquid chromatography has changed over the past 30 years: columns are more robust and reproducible, instrumentation has advanced, and knowledge of the separation process has expanded. The much-anticipated third edition published in 2010 has three authors, Snyder, Kirkland, and Dolan, who have worked with nine collaborating authors to completely update and revise the book.

Book's topic The 1979 (second) edition of *Introduction to Modern Liquid Chromatography* (LC) by Snyder and Kirkland was an important part of my personal introduction to LC. The book has served as an authoritative text on liquid-phase separations for scientists at all levels. However

Contents and critical assessment Seventeen chapters introduce concepts in liquid chromatography from sample preparation through fundamental retention mechanisms. The chapters are 1. Introduction, 2. Basic concepts and the control of separation, 3. Equipment, 4. Detection, 5. The column, 6. Reversed-phase chromatography for neutral samples, 7. Ionic samples: reversed-phase, ion-pair, and ion-exchange chromatography, 8. Normal-phase chromatography, 9. Gradient elution, 10. Computer-assisted method development, 11. Qualitative and quantitative analysis, 12. Method validation (with Michael Swartz), 13. Biochemical and synthetic polymer separations (with Timothy Wehr, Carl Scandella, and Peter Schoenmakers), 14. Enantiomer separations (with Michael Lämmerhofer, Norbert Maier, and Wolfgang Linder), 15. Preparative separations (with Geoff Cox), 16. Sample preparation (with Ronald Majors), and 17. Troubleshooting.

Review of this book is not intended to imply recommendation or endorsement by the National Institute of Standards and Technology.

Certain commercial equipment, instruments, or materials are identified in this review. Such identification does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that the materials or equipment identified are necessarily the best available for the purpose.

Chapters 1 and 2 provide readers with an overview of liquid chromatography, including historical perspective, information on the different modes of LC, how to determine chromatographic figures of merit and how experimental parameters affect them, basic strategies for method development, and a brief description of other types of chemical separations. Instrumentation is the focus of Chaps. 3 and 4: types of pumps, autosamplers, detectors, data systems, and basic instrument maintenance are discussed. The heart of the chromatographic system, the

C. A. Rimmer (✉)
Analytical Chemistry Division,
National Institute of Standards and Technology,
100 Bureau Drive, MS 8392,
Gaithersburg, MD 20899-8392, USA
e-mail: catherine.rimmer@nist.gov

column, is the subject of Chap. 5. Stationary phases have advanced significantly since the second edition was published, and the new edition contains discussion about support types, bonded phases, and selectivity. Specific types of LC separations are covered in Chaps. 6–8; the chapters are organized by sample type (neutral or ionic) and cover reversed-phase, ion-pair/ion-exchange, and normal phase chromatography. Gradient elution chromatography is the subject of Chap. 9, including a discussion of two-dimensional separations and orthogonality. Method optimization through the use of Dry Lab is the primary focus of Chap. 10; however, there is some information about other method development and computer simulation software. Chapters 11 and 12 center on the use of LC for qualitative identification of analytes in mixtures through chromatographic retention and selective/information-rich detection, and quantitative measurement of analytes, and method validation. There are valuable discussions of internal and external calibration, repeatability, robustness, system suitability, and method transfer in these chapters. Analytical- and preparative-scale separations of peptides, proteins, nucleic acids, carbohydrates, viruses, and synthetic polymers and the factors which must be considered when separating larger molecules are addressed in Chap. 13. The resolution of enantiomers through the use of mobile phase additives and chiral stationary phases is the focus of Chap. 14. Chapter 15 introduces preparative-scale separations and

method optimization, including information about instrumentation, columns, and optimal sample size. Chapter 16 presents a thorough review of extraction and sample preparation techniques. Clean-up steps such as liquid–liquid extraction and solid-phase extraction have become an essential component of sample preparation, and they are included in this section. A logical guide to solving instrument and method-related problems is presented in Chap. 17. This includes information on fixing the most common problems, how to diagnose symptoms, and tables of problems and solutions. Finally, there are a series of helpful appendices that focus on the solvents and buffers used in LC.

Readership recommendation The third edition of *Introduction to Modern Liquid Chromatography* provides sufficient breadth to be of interest to scientists new to the field of separations while including depth of information necessary for more experienced practitioners. It is recommended for any laboratory that uses LC for qualitative or quantitative purposes.

Summary This classic text on liquid chromatography has been thoroughly updated through the addition of information on modern instrumentation, columns, and troubleshooting. It is a valuable resource for practicing chromatographers at all levels.