



## BOOK REVIEW

### **Introduction to Modern Liquid Chromatography, Third Edition**

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It would be difficult to overstate the importance of liquid-chromatography-based separations for the preparation of samples for mass spectrometry (MS) analysis. Thus, knowledge of liquid chromatography (LC) methods and instrumentation is often an essential part of an MS user's education. The book *Introduction to Modern Liquid Chromatography*, while not written specifically for the mass spectrometry community, contains a wealth of knowledge that is useful for anyone using LC. The authors, Lloyd R. Snyder, Joseph J. Kirkland, and John W. Dolan, are early pioneers in the development of high-performance liquid chromatography (HPLC). Their knowledge of the field and years of experience teaching it to others is clearly evident in the organization and presentation of the material. Additionally, there are eight additional authors who made significant contributions to specific chapters or parts of chapters. The work is more comprehensive than one would expect for an introductory text. Each section is clearly presented with numerous cross-references, making it easy for a reader to find those sections of particular interest. At the same time, there is enough duplication of concepts and even illustrative figures that each section can be understood without the need to refer to other sections. Another feature worthy of note is that sections that are likely to be of

interest to only a few readers are clearly marked. The work is current, with many references to papers published in 2009.

The material is organized in straightforward manner. The early chapters (1–9) provide the core knowledge that every chromatographer should have. Chapter 1 gives a short history of HPLC, where it stands in relation to other separation techniques, and where additional information on the subject can be found. Chapter 2 covers the basic aspects of the chromatographic process and method development. Chapter 3 covers the hardware components of an HPLC system, except for detectors and columns, which are described in Chaps. 4 and 5. Emphasis is on understanding operational principals with little or no reference to specific products or companies. Two chapters are devoted to the reverse-phase chromatography of neutral samples (Chap. 6) and ionic samples (Chap. 7), and a single chapter (Chap. 8) is devoted to normal-phase LC separations. Finally, the principles of gradient elution are covered in Chap. 9.

The later chapters (10–17) are devoted to more advanced topics, including: computer-assisted method development (Chap. 10); qualitative and quantitative analysis (Chap. 11); method validation (Chap. 12); biochemical and synthetic polymer separations (Chap. 13); enantiomer separations (Chap. 14); preparative separations (Chap. 15); sample preparation (Chap. 16); and a very useful chapter on troubleshooting techniques (Chap. 17). Additionally, Appendix 1 provides useful information on the properties of commonly used HPLC solvents, and Appendix 2 provides recipes for commonly used buffer systems. Each topic is covered in sufficient detail with enough literature references that one can become very quickly oriented with regard to a particular technique or class of compounds.

In summary, I would strongly recommend this book for anyone working with LC and LC/MS. It is a finely crafted introduction that adequately covers nearly every aspect of the science. The emphasis on basic principles and practical aspects ensures that it will be a useful reference for many years to come.