Book Review

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Chromatography: Concepts and Contrasts

by James M. Miller: Wiley,
Hoboken, NJ, USA, 2nd ed., 2009,
pp xxvi + 490,
ISBN 978-0471-47207-0.
Price EUR 94.90, USD 189.95

This work is a second edition of the popular text with the same title and author published in 1988, revised in 2005, and released in paperback in 2009. The material is thus current to about 2004 and some developments since that time such as ultra-performance liquid chromatography or kinetic plots for column characterization have not made it into this revision. I don't find this too damning for a work targeted at an audience of beginner chromatographers. Within its dateline the second edition is a thorough revision somewhat 25% longer than the first edition and generally up to date with respect to nomenclature (following IUPAC guidelines) and contemporary laboratory practices.

There are many books that attempt to serve the needs of the beginner in chromatography. They mostly focus on the nuts and bolts of instrumental methods and end up somewhere in between an instrument operating manual and a global view of the theory and folklore of

chromatography. The implication is that the reader has been placed in front of a chromatographic instrument and needs to get up to speed quickly on how to use it. This is not a relevant situation for most students in academia, who use very few instruments today, and do so only in a prescriptive sense following a set of detailed instructions. This book is refreshing in that it introduces the topic from the point of view of the science required to understand how separations occur and how physical and chemical properties converge to establish suitable operating conditions. The author's style and presentation is clear and compact making for easy reading. This is a good text for a lecture course on chromatography aimed at advanced undergraduates or, indeed, anyone who finds that they would like to strengthen their understanding of separation science without necessarily going on to expert status (for example, lawyers and journalists). The author was clearly influenced by Giddings who pioneered the unified theory approach to chromatography with specialization reduced to a mere work habit. Thus many chapters are not separated by discipline, such as gas chromatography and liquid chromatography, and so on, but by their underlying themes, for example, the kinetic and thermodynamic properties of separation systems and intermolecular forces and how they

account for retention. I find this approach more satisfying for unification with the other branches of chemistry and their method of presentation in an academic setting than the common approach taken in other introductory texts in separation science.

This is certainly a good book and worth its money that will remain useful for many years, as its predecessor has done. There are some weak sections; for example the chapter on qualitative analysis, manages to almost avoid the topic in a sparse 11 pages, when it could have built on the relationship between molecular structure and retention in a thoughtful and instructive way. A new first chapter on Industrial and Government Regulatory Practice is quite interesting as a general read and introduction to the lexicon of acronyms promulgated by regulatory bodies, but is somewhat misplaced at the beginning. I would have placed this chapter towards the end, especially given the title and proposed focus of the book. Of course, I found a few mistakes, but not enough to criticize what is a useful, and, if not unique, at least a satisfying alternative approach to introducing a broad audience to the science, practice, and purpose of chromatography in a global context.

C. F. Poole