

A Global View of LC/MS. How To Solve Your Most Challenging Analytical Problems. Ross Willoughby, Edward Sheehan, and Samuel Mitrovich. Pittsburgh, PA: Global View Publishing, 1998, 554 pp. Paperback. \$49.95. ISBN 0-9660813-0-7.

Does "time of flight" evoke thoughts of your next business trip? Are you a director of a laboratory considering purchasing a mass spectrometer who needs to gain a working knowledge of its capabilities in your laboratory? Is it time to update and improve your testing methods? *A Global View of LC/MS* introduces you to the rapidly expanding universe of mass spectrometry in an easy-to-read, unique "decision-tree" structured guide. This book is not only valuable as an introduction to mass spectrometry but is equally useful as a guide to structured problem solving in the laboratory. As the authors state, "solving problems is what it [the real world] is all about".

Understanding the principles of mass spectrometry is a formidable task; understanding how to use this instrumentation effectively is even more challenging. R. Willoughby, E. Sheehan, and S. Mitrovich have written a guidebook for beginning this process. They have organized the text into five parts using a variety of flow charts, checklists, decision trees, and worksheets. The thought processes begin with the problem definition. This flows into decisions regarding technological needs and whether LC/MS can provide a solution. The reader is then provided a guide to make purchasing/leasing decisions or, alternatively, to contract for mass spectrometry services. Examples of LC/MS applications in environmental chemistry, biomedical and clinical chemistry, pharmaceutical sciences, and biomolecular research are provided. *A Global View* provides important practical information for routine LC/MS analysis that includes discussion of data generation, quantification, interpretation, method development, and validation. An extensive series of appendices that provide fundamentals of LC/MS completes the book.

A Global View of LC/MS provides a

very basic knowledge of LC/MS and a set of tools for solving analytical problems. Of these, the problem-solving concepts are extremely useful. The structured problem-solving approach presented by the authors is appealing because it is applicable to many other areas of research and business. Consider that many of us solve problems by "jumping right in" armed with our educational biases, with limited experience outside our specialties, and with a host of other prejudices. Thus, we do not always investigate a problem in a structured and efficient fashion and may not be aware of the tools available to assist us. The result: our solutions are achieved less efficiently and less accurately, and frequently with cost overruns and delays. "We got it done!" "Right?" These authors provide us with a systematic problem-solving approach that may require a bit more data gathering initially, but the final result is more accurate and can stand the test of time and scientific critique.

The authors define problem solving in three steps: "Intelligence" (gather and define information), "Design" (find and describe many possible solutions), and "Choice" (evaluate solutions and select one). Mass spectrometry offers a myriad of possibilities in solving problems. For example, before you can decide whether to use gas chromatography over liquid chromatography, you must assess whether the compound you're interested in is volatile, and if it is not volatile, whether it can be easily derivatized. Chapter 1 provides an excellent worksheet to help gather intelligence and characterize the problem. In the next chapter, the authors illustrate how many choices there are in LC/MS. From an educational perspective, this chapter and the appendices are the most useful for the reader wishing to gain a broad overview of LC/MS abilities. This is the second theme of the book, education. Certainly this text is not the most in-depth treatment of LC/MS, but the reader is pointed in the right direction for further study. With a broad understanding and help in decision making, you won't

be purchasing a GC/MS for the analysis of hemoglobin. Whether you are new to the field of mass spectrometry or are a hardened practitioner, the thought processes used are extraordinarily valuable. As a mass spectrometrist charged with development of new clinical screening methodologies, I found this guide immediately useful in writing research proposals and justifications for equipment purchases.

Once a method is chosen, the next step is to solve the problem. This text also includes a helpful guide that more specifically addresses individual problem-solving needs such as structure identification, quantification, and interpretation. Section titles such as "The Five I's in Identity", "Screening vs Confirmation", "How Good is Good Enough?", and "Validation: It Ain't Over till ..." are indications of the "down to earth" nature of *A Global View of LC/MS*. As the authors state, a method isn't fully developed until it is validated.

Don't expect to see *A Global View of LC/MS* on your library shelf. It will almost certainly be on your desk or circulating among the scientists in your laboratory or even, dare I say, read by an administrator who wants to know why you need a new mass spectrometer. It is an introductory text to mass spectrometry and is an excellent read for laboratory directors, managers, scientists, students, and anyone with an interest in the rapidly expanding world of mass spectrometry. But this book is also valuable to seasoned mass spectrometrists who wish to improve their decisionmaking processes and to consider other areas of mass spectrometry that may not be their specialties. This text is like no other mass spectrometry book available, and its structured solving approach is particularly noteworthy. *A Global View of LC/MS* certainly lives up to its title.

Donald H. Chace

*Neo Gen Screening
110 Roessler Rd.*

Pittsburgh, PA 15220

E-mail dhchace@neogenscreening.com