

Book review

David A. Wells, High throughput bioanalytical sample preparation. Methods and automation strategies, in: Progress in Pharmaceutical and Biomedical Analysis Series, vol. 5, Elsevier B.V., Amsterdam, 2003, hardcover, xxx + 610 pages, price US\$ 250, EUR 250, ISBN: 0-444-51029-X.

Sample preparation is an extremely important step enabling to obtain exact information about the specific compound present in often very complex matrices. A typical example is detection and quantization of drugs and their metabolites in biological fluids such as blood plasma, serum, or urine, desired products in biotechnology streams, biomarkers in clinical diagnostics, etc. Although many of the methods covered in this book are of general use, this book mostly focuses on sample preparation suitable for pharmaceutical environment.

To make the long story short, let me affirm readers of this that the book is worth of opening. David Wells should be applauded for putting together a monograph, which was largely missing in the libraries. Moreover, he did it all alone. Writing a monograph that eventually has well over 600 pages is certainly not an easy task. I am sure he spent vast amount of time doing that since this book consists of 15 massive chapters covering a variety of topics and methods. Just to collect all the numerous references accompanying each chapter had to be a heroic work.

The book starts with an introduction briefly describing the drug discovery and development process, as well as instrumentation and methods mostly used in pharmaceutical research. Description of role of bioanalysis in the drug development then rounds up this chapter. Chapter 2 brings up fundamental strategies for bioanalytical sample preparation emphasizing the importance of this step, reviewing most of the techniques and introducing essential concepts. The next chapter then describes in significant breath one of the most useful tools in bioanalysis—the microplates that have been invented more than 50 years ago. Following part continues with accessories currently available to use and handle the microplates. Chapter 5 introduces tools and strategies enabling automation of bioanalysis. Next two chapters concern protein precipitation. First, the author introduces method development approaches using high throughput techniques and then follows by methods of their automation. Three chap-

ters are dedicated to liquid–liquid extraction. They start with strategies, method development and optimization, go over automation strategies, to finish with high throughput techniques. Identical line up is used in next three chapters detailing solid phase extraction. Chapter 14, one of the longest in the book, describes on-line sample preparation. A variety of chromatographic techniques is hidden under this title. I certainly liked that the monolithic columns did not escape the author's attention. The final chapter summarized the latest advances in sample prep for bioanalysis and future directions this field is expected to head. Three directions are singled out: molecularly imprinted polymers, chip based devices, and multimodal solid phase extraction. One of the two appendices shows a microplate worksheet while the other presents an extensive list of vendors of products suitable for sample prep, each with its web site address.

All chapters are divided to a number of subsections with very descriptive titles. Just reading the Contents, which fills more than 18 pages at the beginning of the book, is like walking through the Subject index. In fact, the Subject index is the final part and counts almost 700 items. Despite their diversity, the chapters describing the individual approaches also exhibit some similarity in their structure and describe each specific technique in a very deep detail. For example, subsection “High throughput on-line sample preparation using a single column” is subdivided in sections Turbulent flow chromatography, Restricted access media, Monolithic columns, and Immunoaffinity extraction. And each of these is further divided in parts describing the technology, system configuration, procedure, and applications. All chapters uncover a number of practical tips and tricks, demonstrating the author's intimate knowledge of the topic. Many chapters end with method optimization and troubleshooting.

Although this book is shaped mainly for the industrial audience, for which high throughput is “bread and butter”, even those who are preparing one sample at the time will certainly find in it a lot of interesting reading.

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