

BOOK REVIEW

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Review of: *Forensic Science, Handbook of Analytical Separations, 2nd ed.*

REFERENCE: Bogusz MJ, editor. *Review of forensic science, handbook of analytical separations, 2nd ed.* Oxford, UK: Elsevier, 2008, 1007 pp.

Forensic Science, Handbook of Analytical Separations, 2nd ed., will be a particularly valuable resource to forensic laboratories performing analytical separations, particularly those engaged in forensic toxicology or drug chemistry.

This book dedicates almost half of its pages to forensic toxicology applications and compounds of importance, including but not limited to opioids, cocaine, amphetamines, cannabinoids, sedative-hypnotics, antidepressants, antipsychotics, and nonopioid analgesics. Separation science is clearly the focus of each chapter in Part I of the book, with an overview of methods and practical information on an enormous variety of techniques: immunoassay, thin layer chromatography (TLC), liquid-liquid and solid phase extraction, solid phase microextraction (SMPE), supercritical fluid extraction, capillary electrophoresis, gas chromatography (GC), liquid chromatography (LC), mass spectrometry (MS), and a wide variety of coupled techniques including GC/MS and LC/MS/MS. Chapters are not uniform in their approach, but provide a comprehensive overview of the drug in addition to specific issues relating to the analyte, for example deconjugation, derivatization, chirality, and stereospecificity to name a few.

In Part II, many of the same analytical techniques are presented, this time for screening purposes. However, there is very little overlap between the two. Part I is highly detailed and analyte specific,

whereas Part II provides a broad overview of specific techniques (chromatographic, mass spectroscopic, and electrophoretic). Part III deals with emerging forensic toxicology issues. It includes alcohol biomarkers, herbals, drugs and driving, alternative matrices, doping, and pharmacogenomics—all well-written and highly informative overviews of the respective topics. A future edition should certainly expand the brief overview of herbal remedies to include the growing number and popularity of dietary supplements, many of which are not included in this volume. Part III also includes an interesting chapter on quality assurance in forensic toxicology. This chapter goes well beyond the typical laboratory-based practices, addressing roles and responsibilities and global issues.

The remaining pages comprise Parts IV and V dealing with forensic chemistry and forensic identification from biological materials, respectively. Forensic chemistry includes a brief overview of explosives, chemical warfare agents, fire debris, and inks, providing a fairly succinct analytical overview of each. Part V is even shorter, summarizing DNA typing technologies, mitochondrial DNA, Y-chromosome and polymorphisms in *c.* 50 pages no less.

More than 80% of the book content is dedicated to forensic toxicology and its applications. The detail and practical nature of the text make this a great addition to any forensic toxicology library. Those interested in nontoxicological or biological separations may be disappointed by the quantity (not quality) of material presented on these topics. Clearly, the scope of analytical separations within the field of forensic science is enormous, and some editorial focus was necessary. Forensic toxicologists will not be disappointed.

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