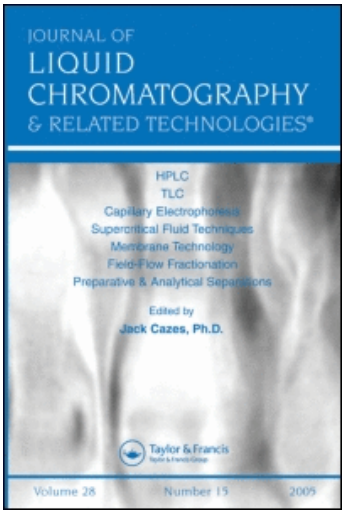

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Handbook of Drug Analysis

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4. **Enzyme-Catalyzed Reactions**, D. L. Coffen, (59).

5. **Stereoselective Analysis in Crop Protection**, H.-P. Buser, E. Francotte, (93).

6. **Chiral Separation Methods**, S. Ahuja, (139).

7. **Development of Chiral Methods**, T. D. Doyle, C. A. Brunner, R. L. Hunt, (155).

8. **Stereoselective Renal Elimination of Drugs**, R. J. Ott, K. M. Giacomini, (173).

9. **Stereochemical Analyses of Food Components**, K. H. Ekborg-Ott, D. W. Armstrong, (201).

10. **Chromatography as a Separation Tool for the Preparative Resolution of Racemic Compounds**, E. R. Francotte, (271).

11. **Enantioselective Transport Through Liquid Membranes**, L. J. Brice, W. H. Pirkle, (309).

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HANDBOOK OF DRUG ANALYSIS, Applications in Forensic and Clinical Laboratories, R. H. Liu, D. E. Gadzala, American Chemical Society, Washington, DC, 1997, 367 pp., $129.95.

This book deals with a timely topic which is drawing great attention these days. The analysis of drugs of abuse has progressed in the last two decades. As stated in the Forword of the book written by Benjamin A. Perillo, Associate Deputy Assistant Administrator, Office of Science and Technology, Drug Enforcement Administration, U.S. Department of Justice, "From the early days of the analyst identifying controlled substances by using color tests, a microscope, and thin-layer chromatography, the profession has progressed to meet the requirements of timeliness and absolute specificity. Ultraviolet (UV) spectrophotometry and then infrared spectrophotometry (IR) became the norms in the middle to late 1970's. In the 1980's, gas chromatography-mass

spectrometry (GC-MS) provided additional capabilities for those laboratories overburdened by high caseloads. During this time there also arose a need for rapid screening of drug samples and quantitative capabilities. Capillary column gas chromatography (CCGC) and high-performance liquid chromatography (HPLC) were adopted for forensic purposes to address these requirements. Demands for increased specificity in controlled-substance examinations of analogs and homologs increased as the forensic sciences entered the 1990's. Among the developments were the evolution of nuclear magnetic resonance (NMR) spectrometry, which addressed molecular configuration determinations, and capillary electrophoresis (CE), which addressed isomer separations. Forensic science has come a long way since 1970, but the best years for improvement and refinement still lie ahead."

"The *Handbook of Drug Analysis: Applications in Forensic and Clinical Laboratories* provides a comprehensive examination of laboratory procedures and a compendium of technical data necessary for the analysis and identification of controlled substances. This publication addresses the classical (translated as "older") methods of analysis that now serve as screening tests. The discussion progresses up to the more sophisticated methods that involve highly technical instrumentation. Liu and Gadzala provide scientific discussions of scientific topics from relevant scientific perspectives that are appropriate for the 1990's and which will take forensic drug analysis into the next millennium.

The *Handbook of Drug Analysis: Applications in Forensic and Clinical Laboratories* should be a welcome addition to any forensic drug analyst's library. This publication will provide the practitioner and anyone interested in entering the practitioner's world of the laboratory with a plethora of information. There is a wealth of information in this text about what we do, how we do it, and why what we do works."

The book is divided into five sections. The first section (Chapters 1 and 2) provides an overview of the nature of drugs of abuse, drug-sample characteristics, and drug-sample pretreatment approaches. The second section (Chapters 3-6) addresses analytical methods that do not necessarily depict the specific molecular features of the drug compounds under examination, and that, therefore, may not generate analytical findings specific enough for conclusive drug identification. More definite methods of analysis are included in the third section (Chapters 7-9). The fourth section (Chapters 10-12) is problem-oriented, addressing recent developments (Chapter 10), applications (Chapter 11), and test-result interpretation (Chapter 12) of many unique analytical methodologies and approaches that are pertinent to the solution of specific

problems in the analysis of drugs of abuse. The fifth section of the book (the appendices) is intended for reference purposes; much useful information on commonly encountered drugs and their metabolites is included.

Sections 2 and 3 of this book are methodology-oriented. Immunoassay techniques can be fully automated and are, therefore, uniquely suited to the high-volume workplace urine drug-testing mandate. Immunoassay tests are also widely used in clinical and postmortem forensic laboratories because they can be rapidly and easily performed with adequate specificities for most intended applications. High-performance liquid chromatography (HPLC) is extensively utilized in clinical laboratories for therapeutic drug monitoring and "stat" analyses because of its capability to detect many drugs, such as benzodiazepines, without derivatization and other extensive sample-preparation procedures. Gas chromatographic methods are popular in postmortem laboratories because of the volatility of most drugs of interest, the variety of detectors, and the greater ease of handling the gas carrier than the liquid mobile phase used in HPLC. Among the established identification methodologies that are readily available and affordable today, mass spectrometry can be easily adapted as a detector for gas and, to a lesser extent, liquid chromatographic methods. The recent development of associated data systems has further improved the efficiency of gas chromatographic-mass spectrometric methodologies, and they are now an indispensable tool in routine drug analysis.

The information provided in Chapters 11 and 12 should be especially valuable to those who, in the practice of their profession, are associated with scientific drug investigation and workplace drug-testing programs. Chapter 11 looks at approaches that can be used for sample source differentiation, which is a unique analytical objective often pursued in crime-laboratory analysis.

Chapter 12 provides essential information required for proper interpretation of test results produced by the now widely adopted workplace drug-testing practices.

This volume is well written and presented and it is free of errors. It is well illustrated with figures and tables. It is recommended to all analytical forensic and clinical chemists.

Table of Contents

3. **Color Tests,** (57).

4. **Thin-Layer Chromatography**, (61).

5. **Immunoassay**, (73).

6. **Chromatographic Methods**, (129).

7. **Molecular Spectrophotometry**, (173).

8. **Nuclear Magnetic Resonance Spectrometry**, (185).

9. **Mass Spectrometry**, (195).

10. **Developing Analytical Technologies**, (247).

11. **Sample Differentiation**, (261).

12. **Interpretation of Test Results**, (283).

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