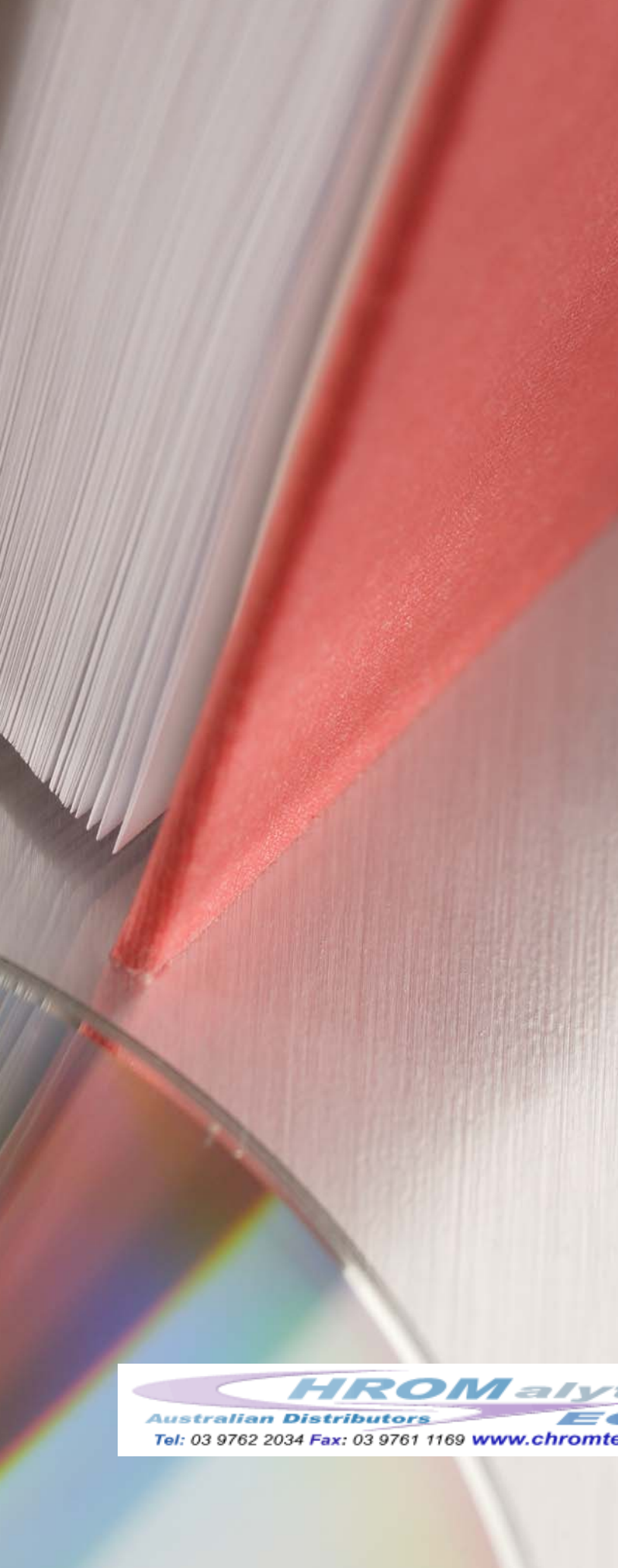


# Educational Materials



**Educational Materials**

Restek Seminars .....500  
Software .....501  
Reference Books .....502-509



**Rick Parmely**  
Director of  
Technical Training  
10+ years of service!

## Restek Seminars

We will present Restek On-The-Road seminars in selected cities during 2007. Check our website, [www.restek.com](http://www.restek.com), for specific dates and locations.

### Seminar Contents

#### Comprehensive Capillary GC

- Introduction to GC Separations*
- History
  - Definitions
  - General Principles and Theory
- Column Selection*
- Factors Influencing Separation: Non-Column Factors
  - Factors Influencing Separation: Column-Related Factors
- Sample Introduction*
- Gas Delivery
  - Gas Control
  - Routine Injection Techniques
  - Specialized Injection Techniques
- Detection Systems*
- Terminology
  - Flame Ionization Detector
  - Electron Capture Detector
  - Mass Spectrometer Detector
- Maintenance and Troubleshooting*
- Routine Maintenance
  - Troubleshooting

#### LC/MS

- Introduction to Separations*
- Overview of LC/MS
  - Principles and Theory of HPLC
  - Modes of Separation
- LC/MS Analyzers*
- Types of Mass Analyzers
  - Ion Detection
- LC/MS Interfaces*
- Background and Historical Perspective
  - Types of Interfaces
- LC/MS Method Development*
- Overview
  - Steps in Developing a Method
  - Special Considerations
  - Quantification in LC/MS
- Case Studies: Practical Applications*
- Forensic
  - Pharmaceutical
  - Environmental
  - Food
  - Based upon class interest
- Troubleshooting and Maintenance of the LC/MS System*
- Troubleshooting the HPLC System
  - Troubleshooting the MS System
  - Basic Maintenance

#### Comprehensive HPLC

- Introduction*
- Definitions, Uses, and Characteristics of HPLC
  - History of HPLC
  - Principles and Theory of HPLC
- Modern HPLC Systems*
- Pumps and Injectors
  - Fittings, Tubing, and Connections
  - Detectors and Recording System
- Separation Techniques*
- Modes of Separation
  - Mobile Phase
- Column Selection*
- Supports
  - Common Bonded Phases
  - Base Deactivation
  - Pore Size
  - Particle Size
  - Column Dimensions
  - Column Protection
- Method Development*
- Defining the Goals
  - Sample Prep Procedure
  - Selecting Mode of Separation
  - Optimizing Conditions
  - Calibration and Validation
- Maintenance and Troubleshooting*
- Routine Maintenance
  - Troubleshooting Problems

#### GC/MS

- Introduction to GC/MS*
- Definitions
  - Column Types
  - Separation Considerations
- Mass Spectrometric Detectors*
- Background
  - Instruments
- Inlets & Injection Techniques*
- Liquid Injection Techniques
  - Other Techniques
- Column Selection*
- Factors Influencing the Separation
  - Column Related Factors
  - Non-Column Related Factors
- Basic Spectral Interpretation*
- Practical Techniques
  - Common Fragments
  - Example Spectra
- Maintenance and Troubleshooting*
- Routine Maintenance
  - Troubleshooting

#### Environmental GC Analysis

- Introduction to Environmental Analysis*
- Why, Where and How
- Sample Preparation*
- Goals
  - QA/QC Sample Extraction
  - Liquid-Liquid Extraction
  - Liquid-Solid Extraction
  - Solid-Liquid Extraction
  - Other Techniques
  - Cleanup of PCBs
- Semivolatile Organics*
- Injection Techniques
  - Column Selection
  - Fast Analysis and Separation of Critical Pairs
  - Detectors and Troubleshooting
- Volatile Organics*
- Sample Introduction
  - Detection Techniques
  - Troubleshooting
- Chlorinated Pesticides and PCBs*
- Chlorinated Pesticides
  - Analysis of PCBs by Aroclor® Number
  - Analysis of PCBs by Congener
- Air Analysis*
- Semivolatile Organics
  - Volatile Organics

### also available

Would your organization benefit from an on-site seminar? Restek's On-Site Seminars are presented at your location, to your employees. We can present any of the seminars listed here at your plant, at a time convenient for you.

For information about Restek seminars on your site, call Rick Parmely at 800-356-1688, ext. 2191, or contact your Restek technical sales representative.

### it's a fact

Restek On-The-Road training seminars are full-day courses presented in an engaging multimedia format. They are equally valuable to beginning chromatographers, those who have moderate experience and want a better understanding of the subject matter, and those interested in the "best practices" and latest technologies. **No sales pitch is presented**, just the facts on how to make your chromatography results better. The bulk of each course is lecture, but numerous demonstrations and problem-solving exercises facilitate and reinforce the understanding of important principles.

### a plus 1 story

"The presentation was well organized and presented in a logical format which made the concepts clear and easy to understand. Learning was painless!"

P. Young, Alkermes, Inc.



Tel: 03 9762 2034 Fax: 03 9761 1169 [www.chromtech.net.au](http://www.chromtech.net.au) [info@chromtech.net.au](mailto:info@chromtech.net.au)

### Pro ezGC™ Methods Development Software

- Optimize temperature and flow programs with a single analysis.
- Reduce analysis time and improve sample resolution.
- Model retention gap and guard column applications, including Restek Integra-Guard™ columns.
- Optimize dual-column run conditions, columns in parallel or in series.

Take the guesswork out of selecting the best column and conditions for your GC analysis. Pro ezGC™ software accurately predicts separations on any capillary column, and is useful for selecting a column and conditions from a single GC run. Using your retention data, or the extensive library, you can automatically evaluate thousands of combinations of column dimensions, oven temperature programs, and carrier gas pressure programs to determine the best separation with the fastest analysis time.

Increase productivity by improving separations and shortening analysis time with optimized temperature and carrier gas programs. Pro ezGC™ software for Windows® operating systems accurately models analyses when using guard columns and capillary restrictors, even when their IDs differ from the analytical column. The power of Pro ezGC™ software is especially helpful when modeling two columns connected in series or two columns connected in parallel to two separate detectors.

Pro ezGC™ includes a master set of retention index libraries at no extra charge! These libraries contain more than 3,000 compounds analyzed on the most commonly used stationary phases, in ten application areas, including pesticides, PCBs, dioxins/furans, flavor and fragrance compounds, drugs of abuse, FAMES, semivolatiles and volatile pollutants, petroleum hydrocarbons, and solvents and chemicals. The libraries permit computer simulation without entering actual laboratory data.

Description	qty.	cat.#
Pro ezGC™ Method Development Software CD-ROM	ea.	21487



For Fast GC, Windows® 95, 98, 2000, NT, ME, or XP.

### did you know?

Pro ezGC™ software will save you time and money by greatly enhancing your productivity and increasing sample throughput.

An unbeatable price to enhance analysis speed & resolution!



### a plus 1 story

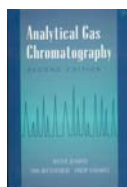
“The Pro ezGC™ software is another great product from Restek. It is powerful, yet easy to use, for GC method development and optimization. I can readily predict the approximate run time of a given complex mixture. It greatly simplifies the amount of work to establish elution order. Furthermore, the price is a drop in the ocean in comparison with what the software can do.”

**Ken Wong**, Technical Manager, Scott Specialty Gases



Rick Parmely, Director of Technical Training

## Restek Recommended Reference Books

**Analytical Gas Chromatography, 2<sup>nd</sup> Edition**

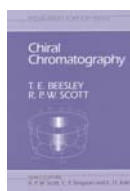
This authoritative guide to chromatographic principles contains information on sample injection, stationary phases, variables in the gas chromatographic process, column installation, troubleshooting, instrument conversion and adaptation, and special analytical techniques.

W. Jennings, E. Mittlefehldt and P. Stremple, Elsevier Science, 1997, 389pp., ISBN 0-12-384357-X **cat.# 21362 (ea.)**

**Chemical Technicians' Ready Reference Handbook, 4<sup>th</sup> Edition**

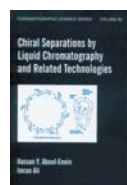
This best-selling handbook is the definitive reference on laboratory safety, analytical procedures, and instrumentation techniques for the modern chemical laboratory. Hailed in three previous editions for its scope and depth of coverage and concise, step-by-step directions for performing virtually every laboratory task, the handbook remains the undisputed classic in the field.

G. J. Shugar and J. T. Ballinger, McGraw-Hill, Inc., 1996, 972pp., ISBN 0-07-057186-4 **cat.# 21493 (ea.)**

**Chiral Chromatography**

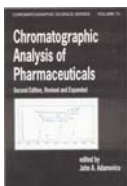
This book provides a basic understanding of the nature of chromatographic separations and relates the principles specifically to the separation of enantiomers. A large number of example separations of both commercially and physiologically interesting chiral mixtures are given, as is a detailed discussion of the mechanism of selectivity in each example.

T. E. Beesley and R. P. W. Scott, John Wiley, 1999, 522pp., ISBN 0-471-97427-7 **cat.# 21094 (ea.)**

**Chiral Separations by Liquid Chromatography and Related Technologies**

Unique in its systematic and detailed description of the various types, structures, and properties of chiral stationary phases (CSPs) and their preparation, application, and future scope, this volume highlights an assortment of liquid chromatographic technologies, including sub- and super-critical fluid chromatography, capillary electrochromatography, and thin layer chromatography.

H.Y. Aboul-Enein and I. Ali, Taylor & Francis, Inc., 2003, 400pp., ISBN 0-8247-4014-9 **cat.# 21449 (ea.)**

**Chromatographic Analysis of Pharmaceuticals, 2<sup>nd</sup> Edition**

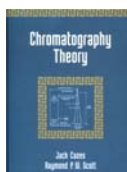
Revised and updated throughout, this highly lauded reference explores the chromatographic methods used for measurement of drugs, impurities, and excipients in pharmaceutical preparations, such as tablets, ointments, and injectables. It contains a 148-page listing of chromatographic data for more than 1300 drugs and related substances—including matrix analysis, sample handling procedures, column packings, mobile phase, mode of detection, and more.

J. A. Adamovics, Taylor & Francis, Inc., 1996, 542pp., ISBN 0-8247-9776-0 **cat.# 21089 (ea.)**

**Chromatography in Food Science and Technology**

Current methods for separating and quantifying carbohydrates, lipids, proteins, peptides, amino acids, vitamins, and aroma and flavor compounds in food products; a concise evaluation of methods used for many food / food product macro and micro-components.

T. Cserháti and E. Forgács, CRC Press, LLC, 1999, 568pp., ISBN 1-56676-749-0 **cat.# 21492 (ea.)**

**Chromatography Theory**

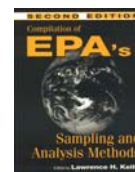
A comprehensive overview of the principles, methods, and fundamental theories of chromatographic separations, including recent advances, mathematical relationships, and useful design techniques for optimal system operation and control of chromatographic variables.

J. Cazes and R. P.W. Scott, Taylor & Francis, Inc., 2002, 496pp., ISBN 0-8247-0778-8 **cat.# 21573 (ea.)**

**Compilation of EPA's Sampling and Analysis Methods, 2<sup>nd</sup> Edition**

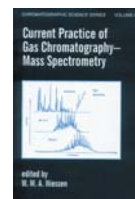
This second edition contains 178 EPA-approved methods and more than 1300 method/analyte summaries. In addition to a brief summary of each method, it includes descriptions of required instrumentation, interferences, sampling containers, preservation techniques, maximum holding times, detection levels, accuracy, precision, quality control contacts, and EPA contacts and phone numbers.

L. H. Keith, CRC Press LLC, 1996, 1728pp., ISBN 1-56670-170-8 **cat.# 21374 (ea.)**

**Current Practice of Gas Chromatography-Mass Spectrometry**

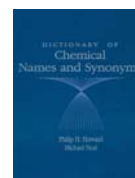
This book details fundamental principles, instrumentation of GC/MS, and industrial, environmental, pharmaceutical, clinical, toxicological, forensic, and food-related applications, revealing findings from 40 contributing scientists from around the world. With more than 1200 references, drawings, equations, tables, and photographs, this is a superb reference for operators, researchers, and research managers, and upper-level undergraduate and graduate students.

W.M.A. Niessen, Taylor & Francis, Inc., 2001, 528pp., ISBN 0-8247-0473-8 **cat.# 21489 (ea.)**

**Dictionary of Chemical Names and Synonyms**

This reference book contains chemical data and synonyms for more than 20,000 significant chemicals, most of which are from the EPA Toxic Substances Control Act list and the Environmental Fate Data Base. In addition, there are 25,000 chemicals from the Hazardous Substances Data Bank, Superlist, National Toxicology Program, Chemical Update System, and the FATE/EXPOS file of chemicals.

P. H. Howard and M. Neal, CRC Press LLC, 1992, 2544pp., ISBN 0-87371-396-6 **cat.# 21379 (ea.)**

**Drug-Facilitated Sexual Assault: A Forensic Handbook**

This unique handbook educates readers in how drugs are used as weapons in committing sexual assaults. It is designed for everyone involved in the investigation of these crimes, including forensic scientists, law enforcement officers, lawyers, toxicologists, and medical professionals.

M. LeBeau and A. Mozayani, Eds., Elsevier Science, 2001, 326pp., ISBN 0-12-440261-5 **cat.# 23054 (ea.)**

**Environmental Sampling and Analysis for Technicians**

This book provides basic knowledge of sample collection, field and laboratory QA/QC, sample custody, regulations, and standards for environmental pollutants. It explains how to validate and interpret analytical data, and presents an overview of the occurrence, source, and fate of toxic pollutants, as well as their control by regulations and standards.

M. Csuros, CRC Press LLC, 1994, 336pp., ISBN 0-87371-835-6 **cat.# 21380 (ea.)**

**Environmental Sampling and Analysis Lab Manual**

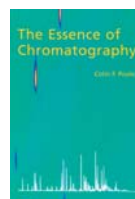
This text covers the latest laboratory techniques, state-of-the-art instrumentation, laboratory safety, and quality assurance and quality control requirements in the environmental analytical lab. If you work in an environmental lab, you will appreciate this unique and valuable text.

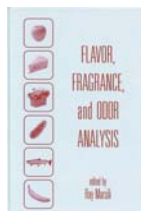
M. Csuros, CRC Press LLC, 1997, 394pp., ISBN 1-56670-178-3 **cat.# 21375 (ea.)**

**The Essence of Chromatography**

A comprehensive survey of modern chromatography, for graduate level courses and professional chromatographers wishing to refresh their background; an effective replacement for *Chromatography Today* (C.F. Poole with S. K. Poole), one of the definitive chromatographic texts of the last decade. Features extensive tabulation of essential data for performing separations and an extensive bibliography to the most recent literature.

C.F. Poole, Elsevier Health Sciences, 2002, 900pp., ISBN 0-444-50198-3 **cat.# 20488 (ea.)**

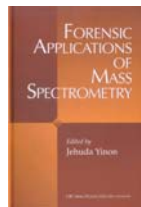




### Flavor, Fragrance, and Odor Analysis

A timely reference to mass spectrometry, sample preparation, gas chromatography-olfactometry, and electronic-nose technology for food, cosmetic, and pharmaceutical applications, emphasizing novel solid-phase microextraction (SPME) procedures. Written from a practical, problem-solving perspective, this is an essential source for chemists, technologists, engineers, and upper-level undergraduate and graduate students. Numerous examples and chromatograms.

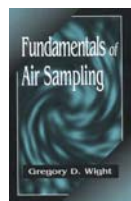
R. Marsili, Taylor & Francis, Inc., 2001, 440pp., ISBN 0-8247-0627-7 **cat.# 21465 (ea.)**



### Forensic Applications of Mass Spectrometry

Forensic Applications of Mass Spectrometry combines the most current developments in applications of mass spectrometry techniques to forensic analyses. The techniques discussed include: capillary GC/MS, thermospray LC/MS, tandem mass spectrometry, (MS/MS), pyrolysis GC/MS and isotope ratio mass spectrometry.

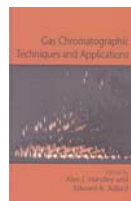
J. Yinon, CRC Press LLC, 1994, 320pp., ISBN 0-8493-8252-1 **cat.# 23056 (ea.)**



### Fundamentals of Air Sampling

This book explains the fundamentals of air sampling, develops the theory of gas measurement, and presents several how-to examples of calibration and use of air and gas sampling devices. Other topics include the basics of pressure measurement and units conversion, and specific discussions regarding the use of a volatile organic sampling train or a SUMMA®-polished canister sampling system.

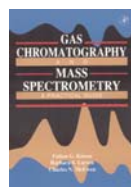
G. D. Wight, CRC Press LLC, 1994, 272pp., ISBN 0-87371-826-7 **cat.# 20492 (ea.)**



### Gas Chromatographic Techniques and Applications

Examines the past decade's many advances in chromatography, with emphasis on new technologies. Describes injection systems that have been made more reliable, column coatings for optimal performance of specific applications, and other new developments.

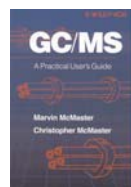
A. J. Handley and E. R. Adlard, CRC Press, LLC, 2001, 320pp., ISBN 0-8493-0521-7 **cat.# 21491 (ea.)**



### Gas Chromatography & Mass Spectrometry, A Practical Guide

This book covers extensive practical information intended to enhance the effectiveness of the GC/MS user. Separation conditions for numerous compound types are provided, including derivatized and underivatized compounds. A section on how to interpret mass spectral data, and examples of mass spectra are provided to further aid structure determination.

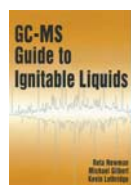
F. G. Kitson, B. S. Larsen and C. N. McEwen, Elsevier Science, 1996, 381pp., ISBN 0-12-483385-3 **cat.# 20497 (ea.)**



### GC/MS: A Practical User's Guide

A practical guide to building, using, and maintaining a complete GC/MS system. It contains full coverage of all vital equipment, a walkthrough of a basic GC/MS analysis, information on optimization, and an exploration of research and environmental uses of GC/MS systems.

M. McMaster and C. McMaster, John Wiley, 1998, 184pp, ISBN 0-471-24826-6 **cat.# 20496 (ea.)**



### GC/MS Guide to Ignitable Liquids

This volume addresses the challenge of accurately identifying and classifying ignitable liquids with unfamiliar chromatographic patterns. The text provides a selection of over 100 ignitable liquid formulations, to supplement the laboratory's standard collection. Both total ion and extracted ion chromatograms are included.

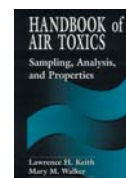
R. Newman, M. Gilbert, and K. Lothridge, CRC Press LLC, 1997, 768pp., ISBN 0-8493-3107-2 **cat.# 20471 (ea.)**

restek best **seller!**

**Handbook of Air Toxics: Sampling, Analysis and Properties**

This reference book contains physical and chemical data for all the chemicals in the National Toxicology Program's Chemical Database and all substances indicated in the US EPA Clean Air Act Amendments.

L. H. Keith and M. M. Walker, CRC Press LLC, 1995, 640pp., ISBN 1-56670-114-7 **cat.# 21373 (ea.)**

**Handbook of Environmental Analysis: Chemical Pollutants in Air, Water, Soil and Solid Wastes**

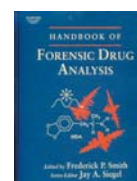
Serving as both a reference handbook and textbook, this title is the first exhaustive treatment of the analysis of toxic pollutants in the environment, including ambient air, groundwater, surface water, industrial wastewater, and soils and sediments.

P. Patnaik, CRC Press LLC, 1997, 608pp., ISBN 0-87371-989-1 **cat.# 21381 (ea.)**

**Handbook of Forensic Drug Analysis**

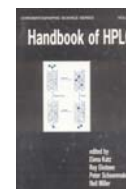
The Handbook of Forensic Drug Analysis provides in-depth, up-to-date methods and results for forensic drug analyses. Chapters written by leading researchers in the field discuss the various forms of drugs, as well as the origin and nature of samples.

F. Smith and J. Siegel, Elsevier Science, 2004, 584pp., ISBN 0-12-650641-8 **cat.# 23055 (ea.)**

**Handbook of HPLC**

This book discusses the principles, techniques, and instrumentation involving HPLC within a detailed comprehensible framework—delineating its usage in separation, purification, and detection processes across a wide variety of disciplines, from industry to applied research.

S.E. Katz, R. Eksteen, P. Schoenmakers, and N. Miller, Eds., Taylor & Francis, Inc., 1998, 1008pp., ISBN 0-8247-9444-3 **cat.# 21087 (ea.)**

**Handbook of Size Exclusion Chromatography and Related Techniques, 2<sup>nd</sup> Edition**

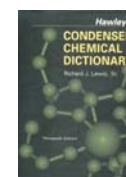
This revised edition covers high-speed size exclusion chromatography, SEC of low molecular weight materials, and the extended family of techniques from two-dimensional liquid chromatography to high osmotic pressure chromatography.

C. Wu, Taylor & Francis, Inc., 2003, 716pp., ISBN 0-8247-4710-0 **cat.# 21448 (ea.)**

**Hawley's Condensed Chemical Dictionary, 14<sup>th</sup> Edition**

This dictionary identifies thousands of chemical substances by name, physical properties, source of occurrence, shipping regulations, CAS number, chemical formula, potential hazards, derivations, synonyms, and applications. It is an essential tool for chemists, chemical engineers, environmental professionals, industrial hygienists, and managers of toxicological and chemical information systems.

R. J. Lewis, Sr., John Wiley, 2001, 1248pp., ISBN 0-471-38735-5 **cat.# 21369 (ea.)**

**High Performance Liquid Chromatography: Principles and Methods in Biotechnology**

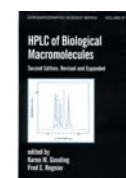
This book will be of great practical use to molecular biologists, biochemists, and biotechnologists who use HPLC to purify and quantify biomolecules. It also will be of interest to those characterizing proteins or DNAs. The book covers sample preparation, column selection, detection of biomolecules, preparative HPLC, and the use of HPLC for specific biomolecules.

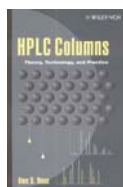
E. D. Katz, John Wiley, 1995, 532pp., ISBN 0-471-93444-5 **cat.# 21370 (ea.)**

**HPLC of Biological Macromolecules: Second Edition, Revised and Expanded**

Reflecting innovations in HPLC from the past decade, this reference presents practical strategies for evaluation and analysis of proteins, peptides, and polynucleotides, plus class-specific applications for characterizing and fractionating biological macromolecules. Contains more than 2,200 references.

K. M. Gooding and F. E. Regnier, Taylor & Francis, Inc., 2002, 792pp., ISBN 0-8247-0665-X **cat.# 21574 (ea.)**





### HPLC Columns: Theory, Technology, and Practice

This is an in-depth guide to HPLC column technology for the practicing technician and academician alike. Along with a comprehensive discussion of the chemical and physical processes of the HPLC column, it includes fundamental principles, separation mechanisms and available technologies, column selection criteria, and special techniques.

U. D. Neue, John Wiley, 1997, 416pp., ISBN 0-471-19037-3 **cat.# 21368 (ea.)**



### HPLC: Practical and Industrial Applications

This book is a troubleshooting, problem-solving guide for scientists, engineers, and technicians who use HPLC in their day-to-day work. It provides the answers to specific problems and includes practical case studies. This is an essential reference for those interested in learning HPLC methods.

J. Swadesh, CRC Press LLC, 1996, 384pp., ISBN 0-8493-0003-7 **cat.# 21377 (ea.)**



### The HPLC Solvent Guide, 2<sup>nd</sup> Ed.

Solvent selection is perhaps the most commonly overlooked parameter in HPLC. Even the most experienced analytical chemists tend to select one of three familiar solvents. The HPLC Solvent Guide provides detailed coverage of all commonly used HPLC solvents for a wide range of separations.

P.C. Sadek, John Wiley & Sons, Inc., 2002, 664pp., ISBN 0-471-41138-8 **cat.# 21979 (ea.)**

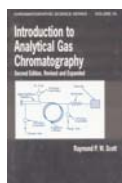


### Interpretation of Mass Spectra, 4<sup>th</sup> Edition

restek best seller!

This updated version builds on the strengths of the previous editions and presents the information required to clearly and concisely interpret mass spectra. Chapters include information on elemental composition, molecular ions, mechanisms of ion fragmentations, unimolecular ion decompositions, and mass spectra of common compound classes. It is a valuable and necessary resource for every person practicing mass spectrometry.

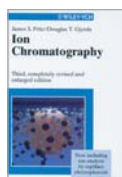
F. W. McLafferty and F. Turecek, University Science, 1993, 371pp., ISBN 0-935702-25-3 **cat.# 20498 (ea.)**



### Introduction to Analytical Gas Chromatography, 2<sup>nd</sup> Edition

Completely updated to maintain currency in a rapidly changing field, the second edition of this reference/text furnishes comprehensive information requisite to the successful practice of gas chromatography—covering the principles of chromatographic separation, the chromatographic process from a physical chemical perspective, instrumentation for performing analyses, and various operational procedures.

R. P. W. Scott, Taylor & Francis, Inc., 1997, 416pp., ISBN 0-8247-0016-3 **cat.# 21084 (ea.)**



### Ion Chromatography, 3<sup>rd</sup> Ed., Completely Revised and Enlarged Edition

This is essentially a new book, describing materials, principles and methods of ion chromatography in a clear and concise style. It is an introduction for the newcomer and a practical guide for the experienced user. The scope has been enlarged to include capillary electrophoresis as well as chemical speciation.

J.S. Fritz and D.T. Gjerde, Wiley-VCH, 2000, 267pp., ISBN 3-527-29914-9 **cat.# 21789 (ea.)**



### Liquid Chromatography-Mass Spectrometry: An Introduction (softcover)

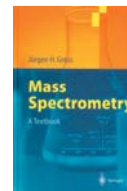
First explaining the basic principles of liquid chromatography and mass spectrometry, then discussing the current applications and practical benefits of LC/MS, along with descriptions of the basic instrumentation, this title will be the indispensable reference source for everyone wishing to use this increasingly important tandem technique.

R.E. Ardrey, John Wiley & Sons Ltd., 2003, 296pp., ISBN 0-471-49801-7 **cat.# 20176 (ea.)**

**Mass Spectrometry, A Textbook**

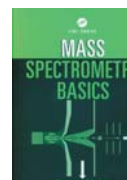
An ideal textbook for students and professionals as well as newcomers to the field. Starting from the very first principles of gas-phase ion chemistry and isotopic properties, the book takes the reader through the design of mass analyzers and ionization methods all the way to mass spectral interpretation and coupling techniques. Step-by-step, the reader learns how mass spectrometry works and what it can do. The book comprises a balance of practice-oriented information and theoretical background in a clear layout and with a wealth of high-quality figures.

J. H. Gross, Springer, 2004, XVIII, 518pp., 357 illus, ISBN 3-540-40739-1 **cat.# 22696 (ea.)**

**Mass Spectrometry Basics**

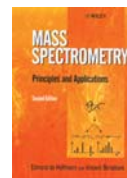
Authoritative yet plain-spoken explanations of this powerful analytical method, without elaborate mathematical derivations: processes, applications, and underlying science, supported by figures and graphics. Includes practical approaches to interpreting mass spectral data and step-by-step guides for identifying chemically relevant compounds. Recommended to those who have not been trained in mass spectrometry; also serves as a refresher for practicing mass spectroscopists.

C.G. Herbert and R.A.W. Johnstone, CRC Press LLC, 2002, 496pp., ISBN 0-8493-1354-6 **cat.# 21461 (ea.)**

**Mass Spectrometry: Principles and Applications, 2<sup>nd</sup> Edition**

A complete overview of the principles, theories and key applications of modern mass spectrometry, focused on recent developments. All instrumental aspects of MS are clearly and concisely described, with greater coverage of ESI and MALDI, and featuring biological and pharmaceutical applications. Invaluable to undergraduates and postgraduates, and to researchers looking for an overview of the latest developments.

E. De Hoffmann and V. Stroobant, John Wiley & Sons, Inc., 2001, 420pp., ISBN 0-471-48566-7 **cat.# 21978 (ea.)**

**Methods of Air Sampling and Analysis, 3<sup>rd</sup> Edition**

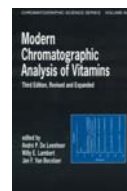
This book includes precise directions for analyzing a long list of air contaminants. All contaminants one can analyze or monitor using a given method are consolidated to facilitate use. An excellent reference manual for all analytical laboratories conducting air analyses.

J. P. Lodge, CRC Press LLC, 1988, 784pp., ISBN 0-87371-141-6 **cat.# 20493 (ea.)**

**Modern Chromatographic Analysis of Vitamins, 3<sup>rd</sup> Edition**

More than 1450 references, drawings, and tables that elaborate on vitamins in different matrices, and chromatographic data on all vitamins. Includes a section on capillary electrophoresis and mass spectrometry, and provides guidance in conducting state-of-the-art separation analyses and extraction procedures.

A. P. De Leenheer, W. E. Lambert and J. Van Bocxlaer, Taylor & Francis, 2000, 632pp., ISBN 0-8247-0316-2 **cat.# 21092 (ea.)**

**Modern Derivatization Methods for Separation Sciences**

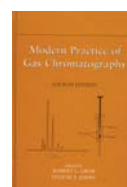
Includes many new derivatizing reagents not covered by Blau and Halket (Wiley, 1993), or other books to date in this field of increasing importance. Concentrates on synthesis of derivatives for HPLC and capillary electrophoresis, techniques of great interest to pharmaceuticals chemists.

T. Toyooka, John Wiley, 1999, 312pp., ISBN 0-471-98364-0 **cat.# 21444 (ea.)**

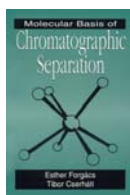
**Modern Practice of Gas Chromatography, 4<sup>th</sup> Edition**

The bible of gas chromatography—offering everything the professional or the novice needs to know about running, maintaining, and interpreting the results from GC. Includes new chapters on GC/MS, optimization of separations and computer assistance; high speed GC; mobile phase and gas system requirements; sample preparation; qualitative and quantitative analysis by GC; updated information on detectors; validation and QA/QC of chromatographic methods; and useful hints for good gas chromatography.

R.L. Grob and E.F. Barry, Wiley-Interscience, 2004, 1064pp., ISBN 0-471-22983-0 **cat.# 21173 (ea.)**



restek best seller!



### Molecular Basis of Chromatographic Separation

Covers practical and molecular aspects of modern separation techniques and explains how to select the most efficient chromatographic method through understanding the molecular basis of separation. It discusses structure-retention relationships, separation and optimization, and retention prediction.

E. Forgacs and T. Cserhati, CRC Press LLC, 1997, 256pp., ISBN 0-8493-7696-3 **cat.# 21378 (ea.)**



### Practical HPLC Method Development, 2<sup>nd</sup> Edition

This landmark work brings scientists up-to-date on method development for HPLC. It covers all the essential steps of method development—sample pretreatment, detection of sample bands, choosing separation conditions, and method validation and transfer. It also contains exhaustive indexing and cross-referencing, enabling quick access to analysis procedures for different kinds of samples.

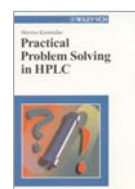
L. R. Snyder, J. J. Kirkland and J. L. Glajch, John Wiley, 1997, 800pp., ISBN 0-471-00703-X **cat.# 21363 (ea.)**



### Practical HPLC Methodology and Applications

This book provides the novice with sufficient practical information to begin developing useful separations. It also provides the intermediate practitioner with a useful bridge between strictly introductory texts and more advanced treatises. Included are nine basic experiments to teach hands-on investigation.

B. A. Bidlingmeyer, John Wiley, 1993, 464pp., ISBN 0-471-57246-2 **cat.# 20467 (ea.)**



### Practical Problem Solving in HPLC

This book does an excellent job of describing quick and easy solutions to more than 45 typical HPLC problems or questions. It covers simple equipment tests and selection criteria for columns and buffers, options for optimizing separations, and retention of ionizable components in RP/LC. It also contains references, data tables and check lists—in short, it's a first aid kit for every HPLC user.

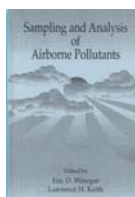
S. Kromidas, Wiley-VCH, 2000, 193pp., ISBN 3-527-29842-8 **cat.# 21099 (ea.)**



### Quantitative Chromatographic Analysis

This book provides practical guidance concerning all critical factors involved in quantitative chromatographic analysis; details the fundamental principles of gas, high-performance liquid, and thin-layer chromatographic instrumentation; and reveals how these considerations affect quantitative assays—documenting the significance of response index, data processing, internal and external standards, injector systems, solvent focusing, temperature programming, pumping systems, and extraction dispersion.

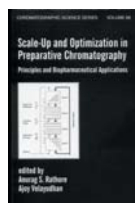
T. E. Beesley, B. Buglio, and R. P. W. Scott, Taylor & Francis, 2000, 394pp., ISBN 0-8247-0503-3 **cat.# 21093 (ea.)**



### Sampling and Analysis of Airborne Pollutants

This text presents a comprehensive overview of sampling and analysis methodologies for volatile organic compounds and aerosols, and provides in-depth information on optical remote sensing technologies and data interpretation techniques.

E. D. Winegar and L. H. Keith, CRC Press LLC, 1993, 384pp., ISBN 0-87371-606-X **cat.# 20468 (ea.)**



### Scale-Up and Optimization in Preparative Chromatography: Principles and Biopharmaceutical Applications

Addresses the challenges faced in the design, development, and scale-up of large-scale chromatographic processes. Offers fundamental analysis of the underlying physicochemical principles to select optimal modes of interaction, design efficient separations, and increase productivity in the manufacture of novel therapeutics and pharmaceuticals.

A. S. Rathore and A. Velayudhan, Taylor & Francis, Inc., 2002, 368pp., ISBN 0-8247-0826-1 **cat.# 21445 (ea.)**

**Solid Phase Extraction: Principles and Practice**

This volume equips chemists in any field with an incomparable one-stop source of up-to-date information on SPE. With sections devoted to fundamental principles, applications, and new technology, it is both comprehensive and easy to use.

E.M. Thurman and M.S. Mills, John Wiley, 1998, 372pp., ISBN 0-471-61422-X **cat.# 20494 (ea.)**

**Solid Phase Microextraction: A Practical Guide**

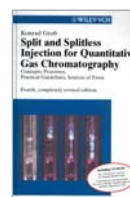
Provides a sound theoretical basis for SPME, plus highly detailed descriptions of pharmaceutical, environmental, food science, forensic, and toxicological applications. Discusses methods for routine analyses, compares SPME with traditional sample preparation methods, defines techniques for developing SPME methods, addresses regulatory agency standards, and more. User-friendly, essential reading for chemists; chromatographers; toxicologists; forensic scientists; laboratory managers and technicians; and upper-level undergraduate and graduate students.

S.A. Scheppers Wercinski, Taylor & Francis, Inc., 1999, 257pp., ISBN 0-8247-7058-7 **cat.# 21466 (ea.)**

**Split and Splitless Injection for Quantitative Gas Chromatography: Concepts, Processes, Practical Guidelines, Sources of Error, 4th, Completely Revised Edition**

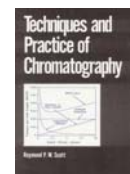
This comprehensive handbook has been totally revised and updated, and contains information on sample evaporation in the injector, matrix effects, and a new chapter on injector design. It also includes a CD-ROM containing visualization of the evaporation process during split and splitless injection.

K. Grob, Wiley-VCH, 2001, 480pp., ISBN 3-527-29879-7 **cat.# 20451 (ea.)**

**Techniques and Practice of Chromatography**

Introducing scientists of all disciplines to the chromatographic process and how it functions, this unique, easy-to-read volume treats chromatography as a single subject—discussing the basic principles and theory of chromatographic separation as well as specific chromatographic procedures, including gas, liquid, and thin-layer chromatography.

R. P. W. Scott, Taylor & Francis, Inc., 1995, 416pp., ISBN 0-8247-9460-5 **cat.# 21088 (ea.)**

**Troubleshooting HPLC Systems: A Bench Manual**

This is an immensely useful guide with an emphasis on the use, maintenance, and troubleshooting of HPLC systems. It contains a detailed review of instrumentation and accessories, the role of operating parameters as indicators of system performance, step-by-step troubleshooting protocols, and how to set up preventive maintenance programs for HPLC systems.

P. C. Sadek, John Wiley, 1999, 320pp., ISBN 0-471-17834-9 **cat.# 21367 (ea.)**

