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Expand Your Mind and Your Horizons with Spectros Associates Short Courses!

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**Expand Your Mind
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Chemistry Short Courses

- ✓ Principles of Chromatography & Spectroscopy
- ✓ Principles of Organic Chemistry



Cleveland OH
May 20-21, 2004

Chicago IL
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Enhance your learning with Spectros Associates books

Fundamentals of Fourier Transform Infrared Spectroscopy

A 200-page hardcover book introducing important FTIR concepts including how an FTIR works, how to manipulate spectra to analyze mixtures, how to prepare samples, and quantitative analysis. This book accompanies Spectros Associates Fundamentals of FTIR and IR Sample Preparation training courses. This book is published by CRC Press and is available from Spectros Associates.

Infrared Spectral Interpretation: A Systematic Approach

A 265-page hardcover volume covering many aspects of how to use IR spectra to perform identities and identify unknowns. The book begins with what determines the peak positions, heights, and widths in a spectrum. Then, a systematic 10-step method for properly interpreting spectra is presented. The spectra of economically important molecules including hydrocarbons, alcohols, ethers, carbonyl groups, amides, amines, polymers, and inorganics are analyzed using this 10-step method. Each chapter includes an introduction to the structures and nomenclature for the molecules covered, many example spectra, and unknown spectra that can be interpreted for

Quantitative Spectroscopy: Theory and Practice

This 200-page hard cover book provides an overview of how to use spectroscopic absorbance measurements to measure the concentration of molecules in samples. Relevant theory is presented to help you understand the important experimental variables that affect calibration quality. Then, how to avoid common experimental problems and how to spot bad data is discussed. An understandable presentation of the complex mathematical algorithms used to generate calibrations is made, with an emphasis on the advantages and disadvantages of each method. Ultimately, a calibration process is presented that users are encouraged to follow to achieve robust and accurate calibrations. This book is published by Academic Press, and is available from Spectros Associates.

Infrared Gas Analysis

Finally, a book devoted exclusively to the analysis of gases via FTIR. This volume is your complete guide to the use of FTIR spectrometers in this important and growing application. The book is divided into two sections. The first section focuses on instrumentation, and covers how an FTIR works, optimizing parameters for gas phase analysis, manipulating spectra to maximize information content, gas phase sampling accessories and techniques, and quantitative gas phase analysis. Section II focuses on interpreting Gas Phase Infrared Spectra, helping you make sense out of the data that comes out of the instrument. This section covers what determines the peak positions, heights, and widths in gas phase spectra, then systematically examines the spectra of a number of relevant example compounds. This 150-page book is available in soft cover from Spectros Associates.

Mastering GRAMS/32 — All versions

This 140-page soft cover book covers important software topics such as manipulating spectra, file importation, peak picking, and automating functions. Additional chapters discuss how to use the powerful spectral manipulation algorithms present in GRAMS. The book is full of exercises that students can perform to increase learning. This book is a nice complement to Galactic Industries' *GRAMS/32 User's Guide*. Please specify version number when ordering.

Array Basic Programming

This powerful, easy-to-use, programming language comes standard on all Galactic Industries GRAMS products. The language allows users to automate and customize their installations of GRAMS. The book assumes no previous programming experience, yet quickly gets readers up to speed so they can write their own programs. The book is packed with code sections and complete programs that users can customize to create their own applications. Available in soft cover only.

Mastering PLSPlus/IQ

This GRAMS/32 add-on package uses factor analysis algorithms (PCR and PLS) to achieve robust and accurate spectroscopic calibrations. This software guide not only walks you through the software part of achieving calibrations, but also contains relevant theoretical discussions also found in Dr. Smith's *Quantitative Spectroscopy* book. Thus, the book is a true blend of theory and practical information. Available in soft cover only.

All books are written by Dr. Brian C. Smith of Spectros Associates. Each book costs \$125, which includes all shipping, handling, and taxes. Call 508-845-9712 or e-mail info@spectros1.com to order.

Principles of Chromatography & Spectroscopy

Summary:

Learn the principles of how gas & liquid chromatographs work and use this knowledge to optimize your separations. Discover how infrared and UV/Vis spectrometers measure spectra, and how to use spectra to identify molecules and measure concentrations. Ultimately, you will learn how to maximize analysis quality while minimizing analysis cost.

You will . . .

- Find out how chromatographs purify mixtures, and how to optimize separations
- Realize the benefits of spectroscopy by learning how to identify and quantify unknowns using this important technique
- See how to perform calibrations properly, and whether you can legitimately apply them to your samples
- Learn how to quantify precision and accuracy, then reduce the error in your measurements
- Discover how to maximize analysis quality while minimizing analysis cost
- See how to make the transition from analyst to chemical problem solver

Principles of Organic Chemistry

Structures, Properties, & Nomenclature

Summary:

An excellent 1-day introduction to organic chemistry for technicians, a great refresher course for managers and experienced workers. After taking this course, you will be able to draw chemical structures, write their names properly, and understand why molecules have specific properties.

You will . . .

- Discover simple guiding principles that will help you predict chemical properties based on structure
- Shore up your understanding of important chemical concepts such as orbitals, ionic and covalent bonding, and intermolecular interactions
- Understand the importance of molecular orbitals in determining chemical properties such as boiling point, solubility, and reactivity
- Comprehend how to name and draw a wide range of chemical structures
- See how hydrogen bonding gives water, alcohols, amines, and carboxylic acids their unique properties

Registration Form

Name _____	Label	VIP Code _____
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Cleveland OH

- May 20 Principles of Chromatography & Spectroscopy
May 21 Principles of Organic Chemistry

Chicago IL

- May 25 Principles of Chromatography & Spectroscopy
May 26 Principles of Organic Chemistry

Registration is effective upon our receiving your check, purchase order, or an authorization to charge your **VISA, MasterCard, or American Express** credit card. Please telephone (508) 845-9712 to charge.

Tuition Includes breakfast, lunch, refreshment breaks, and all training materials.
One Course \$ 625.00
Both Courses \$ 1,195.00

Locations

Hampton Inn, Cleveland OH
Hampton Inn, Elk Grove Village IL

Discounts:

- Volume: 10% for 3 or more people from the same organization who register at the same time for the same course
Academic: 10% for full-time students, teachers, or professors

Cancellation Policy

Registrants who cannot attend a course(s) for any reason will receive full credit towards a future course(s).

Why Take These Courses?

- Practical, Easy-to-Understand, Applications Oriented Presentation
- Expert and Experienced Instructor
- Informal Atmosphere

The Instructor



Dr. Brian C. Smith is Founder and Principal of Spectros Associates. Over the last decade thousands of scientists have benefited from his instruction in chemistry, spectroscopy, and software training courses. He has over 25 years of industrial experience

as a chemist. Dr. Smith has authored several popular books on analytical chemistry, and earned his Ph.D. in Chemistry from Dartmouth College.

Try Our Other Courses

Fundamentals of FTIR
Hands-On IR Sample Preparation
IR Spectral Interpretation I, II, and III
Quantitative Spectroscopic Analysis
Infrared Gas Analysis
Mastering GRAMS/32®
Array Basic™ Programing
Mastering PLSPlus®

Check out our Website at www.spectros1.com for Course Outlines and Schedules

All courses can be taught at your site. Please call for a quote.

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