

Course: **The Fundamentals of Infrared Spectroscopy**

This introductory course concentrates on the basic theory of infrared spectroscopy, principles of operation of the instruments, use of accessories, typical applications, and strategies for data analysis. By taking this course, you will:

- Learn how an FT-IR spectrometer operates and why it is different from a grating instrument
- Recognize good spectra and bad spectra and learn what to do to prevent the bad ones
- Learn what the “trading rules” are and how to effectively use them
- Find out how to choose and use the best sampling accessory for your specific applications
- Understand what the data mean and recognize some of the pitfalls of spectral searching
- Discover how to extend the capabilities of the instrument for future applications.

SCHEDULE

Training Dates

Time

April 8, 2014	10:30 AM - 12:00 PM
April 15, 2014	10:30 AM - 12:00 PM
April 22, 2014	10:30 AM - 12:00 PM
April 29, 2014	10:30 AM - 12:00 PM

Course structure:

Session 1: Introduction to FT-IR

- › What is infrared spectroscopy
- › Terminology
- › Instrumentation
- › General operations and “trading rules”

Session 2: Sampling accessories

- › Classical techniques
- › General purpose accessories
- › Specialized accessories
- › PAS
- › TGA
- › GC
- › Microscopes

Session 3: Data reduction and analysis

- › Transmission, absorbance, reflectance — and where you use each one
- › Good vs. bad data
- › Quantitative vs. qualitative analysis
- › Spectral interpretation and searching

Session 4: Application Areas

- › Bulk characterization
- › Trace identification
- › Spectral, structural, and physical property Relationships
- › Polymers and plastics
- › Biological molecules
- › Nanotechnology
- › Organic synthesis
- › Contamination monitoring
- › Structure determination
- › Surface modifications
- › Composition
- › Pure chemicals
- › Reaction products
- › Material identification
- › Product failures
- › Forensics
- › Pharmaceuticals
- › Food