

Training Experience

Edward G. Bartick

FBI Academy In-house Classes

Infrared Spectrometry Forensic Trace Analysis

E. Bartick is the founder, coordinator and major lecturer. This is an intense, lecture - laboratory, one-week class for forensic examiners of federal, state and local laboratories. This is near the equivalence of a one-semester university class. The class was started in 1991 and has been offered once or twice a year since.

Forensic Polymer Analysis: Paints and Tapes

Coordinator 2003 – 2004 This class covers a broad range of polymer theory, manufacturing and forensic analysis. Many lecturers are invited in from industry and other forensic laboratories. Laboratory exercises are supervised by forensic instructors.

Class Schedule: INFRARED SPECTROMETRY FOR TRACE ANALYSIS

Monday

- 8:00 Introduction (Bartick)
- 8:15 Historical Perspective of IR Analysis (Bartick)
- 8:30 Introduction to Infrared Spectrometry (Coates)
- 9:00 FT-IR Theory & Operating Variables (Suzuki)
- 10:00 **Break**
- 10:30 Introduction to Interpretation of IR Spectra: Part I (Coates)
- 11:30 Introduction to Interpretation of IR Spectra: Part II (Coates)
- 12:30 **Lunch**
- 1:30 Instrument Care and Checks (Merrill)
- 2:00 **LABORATORY #1**
 - A. Instrument Introduction
 - B. Instrument Checks
 - C. Conventional Sampling
 - D. Computer Subtraction
- 5:00 **Wrap-Up**

Tuesday

- 8:00 Computerized Methods (Bartick)
 - A. Databases & Spectral Searching
 - B. Computer Subtraction
 - C. General Spectral Calculations
- 9:00 Sampling Methods I: Transmission (Bartick)
 - A. Solids
 - B. Liquids
 - C. Pyrolysis
- 9:30 **Break**

- 10:00 Sampling Methods II: Reflectance
 - A. Reflection-Absorption (Suzuki)
 - B. Specular (Suzuki)
 - C. Diffuse (Suzuki)
- 11:00 D. Internal (IRS, ATR) (Bartick)
- E. Accessory Care and Alignment (Bartick)
- 11:30 IR Spectrometry's Role in the Examination of Physical Evidence (Suzuki)
- 12:30 **Lunch**
- 1:30 **LABORATORY #2**
 - A. Diffuse & ATR Sampling
 - B. Tungsten Wire Probes
 - C. Single Reflection In-Sample Compartment ATR Demo
- 5:00 **Wrap-Up**

Wednesday

- 8:00 Microsampling Methods
 - A. Conventional (Bartick & Suzuki)
 - 8:30 B. FTIR Microscopy (Reffner)
- 9:30 **Break**
- 10:00 Forensic Applications II
 - A. Fibers (Bartick)
 - 10:45 B. Photocopy Toners (Merrill)
 - 11:15 C. Drugs (Suzuki)
- 11:45 Class Photo
- Lunch**
- 1:00 **LABORATORY #3**
 - A. Microscopy
 - B. Extended Range Paint Analysis
- 5:00 **Wrap-Up**

Thursday

- Forensic Applications III
 - 8:00 A. Explosives (Suzuki)
 - 8:30 B. Adhesive Tapes (Merrill)
- 9:30 **Break**
- 10:00 C. General Polymers (Bartick)
- 10:30 D. Auto Paints (Suzuki)
- 11:30 E. Auto Paint Data Base (Chem. Unit Rep.)
- 12:00 **Lunch**
- 1:00 **LABORATORY #4**
 - A. Continuation of Microscopy & Extended Range Paint Analysis.
 - B. Mock Cases (Bartick - Monitor)
- 4:00 C. Discussion of Mock Cases
- 5:00 **Wrap-Up**

Friday

- 8:00 Considerations when Purchasing an IR Spectrometer (Bartick)
 - 8:30 Future of Forensic Vibrational Spectrometry (Bartick)
 - 9:30 BREAK
 - 10:00 Test / Student Evaluation/Test Discussion
 - 11:00 CLASS COMPLETE
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Class Schedule: FORENSIC ANALYSIS POLYMERS: PAINTS AND TAPE**Monday**

- 8:00 Introduction & Administrative Matters (Bartick, CTFSRU)
- 8:30 Introduction to Polymers and Coatings (Roesler, Bayer)
- 10:00 Break
- 10:15 Introduction to Polymers and Coatings (Continued)
- 11:45 Lunch
- 12:45 Architectural Paints (Janezic, Sherwin-Williams)
- 2:45 Break
- 3:00 Introduction to Automotive Paint (Gilbert, BASF)
- 5:00 Video of GM Assembly Plant
- 5:30 Wrap up for dinner

Tuesday

- 8:00 Polarized Light Microscopy (Eyring, AZ St. Lab)
- 9:30 Break
- 9:45 Microspectrophotometry Color Analysis (Martin, Craic Tech.)
- 11:00 FT-IR of Paints (Suzuki, WA State Patrol)
- 12:00 Lunch
- 1:00 FT-IR of Paints (continued)
- 2:15 Break
- 2:30 Pyrolysis GC/MS (Wampler, CDS)
- 4:00 FBI Protocol for Paint Examination (Bradley, FBI Chem. Unit)
- 5:00 Wrap up for dinner

Wednesday

- 8:00 Duct Tape (Serra, Tyco Adhesives)
- 9:45 Break
- 10:00 Video of Tyco Adhesives
- 10:30 Miscellaneous Tapes (Johnston, Consultant)
- 12:00 Lunch (1 hr)
- 1:00 Miscellaneous Tapes (continued)
- 3:00 Break
- 3:15 FT-IR of Tapes (Bartick)
- 4:15 Break
- 4:30 FBI Tape Protocols (Bradley)
- 5:30 Wrap up for dinner

Thursday**LABORATORY**

- 8:00 Lab Introduction (Bartick)
- 8:30 Lab - Analysis of Paints and Tapes (FBI Lab Staff)
- 11:45 Class Photo (Photographer)
- 12:00 Lunch
- 1:30 Lab - Analysis of Paints and Tapes (Continued)
- 5:30 Wrap up for dinner
- 7:00 Optional Session - Discussion of Results on Paint & Tape Spectral Interpretation (Suzuki & Bartick)

Friday

- 8:00 Scanning Electron Microscopy/Energy Dispersive X-Ray Fluorescence Analysis (Ward, FBI Chem. Unit)
- 9:15 Break
- 9:30 Paint Examination Involving Works of Art (Martin, Orion Analytical)
- 10:45 Wrap up/Critique (Bartick)
- 11:00 Completion of Class