

Spectros Associates Proudly Presents the One Day Short Course

Infrared Sample Preparation

Instructor: Dr. Brian C. Smith

A 1-day overview of how to prepare samples for infrared analysis. The first part of the course is a detailed look at the wide variety of infrared sampling techniques. The second part of the course is a hands-on sample preparation and analysis laboratory using real FTIRs and sampling accessories. You will learn how to prepare solids, powders, liquids, semi-solids, pastes, gels, polymer, and gases for IR analysis. Sample preparation is half the battle in obtaining good spectra, *learn to win that battle!* The course is based on the 200 page hardcover textbook *Fundamentals of FTIR* written by Dr. Smith and published by CRC Press.

I. Overview of IR Sample Preparation Techniques

- A. Transmission Sampling**
- B. Reflection Sampling**
- C. Advantages & Disadvantages**

II. Transmission Sampling for Solids

- A. KBr Pellets**
 - 1. Sample Prep.**
 - 2. Pellet Problems**
- B. Mulls (Mineral/Nujol)**
 - 1. Preparation**
 - 2. Eliminating Oil Bands**

III. Transmission Sampling for Polymers

- A. Casting Films**
- B. The Heat & Pressure Method**

IV. Transmission Analysis of Liquids and Gases

- A. Capillary Thin Films**
- B. Sealed Liquid Cells**
- C. Gas Cells**

V. Diffuse Reflectance (DRIFTS) for Solids and Powders

- A. Sample Prep.**
- B. Applications**
- C. Abrasive Sampling**

VI. Attenuated Total Reflectance (ATR): A Technique for Many Samples

- A. Accessory Design**
- B. Variables Affecting Spectral Appearance**
- C. Applications**
 - 1. Polymers**
 - 2. Semi-Solids: Gels, Waxes, Pastes etc.**
 - 3. Liquids**
 - 4. Powders**

VII. Sample Preparation Workshop Experiments

- A. KBr Pellet Analysis of an Aspirin Tablet**

- B. DRIFTS and Abrasive Sampling of Solids**

- C. Capillary Thin Films: The Easy Way to Analyze Liquids**

- D. ATR Spectra of :**
 - 1. Aqueous Solutions**
 - 2. Semi-Solids**
 - 3. Polymers**
 - 4. Powders**

Wrap-up. Time for individual consultations and questions.