

Fourier Transform Infrared Spectroscopy

Instrument:

Perkin Elmer Fourier Transform Infrared Spectrometer
1700 series

Suggested uses:

Identification and comparison of organic materials

Materials may include but are not limited to:

- Explosives
- fibers
- paints
- polymers
- questioned liquids and solids

FTIR Calibration Procedures

Calibration of the FTIR Spectrometer will be done a minimum of

once per month. However, calibration is not limited to once per month and can be performed as needed.

-Turn on the computer. When computer has booted up the c:\> prompt will appear. Type in WIN and press ENTER. This will open the PROGRAM MANAGER and the PE APPLICATIONS window will be in the center of the screen.

-Move cursor to SPECTRUM FOR WINDOWS icon and double click.

-Login

-Move cursor to SET UP and click. Pull down to INSTRUMENT and click. Click on BEAM icon and make sure that the internal beam TGS is selected. Click on UPDATE. Make sure that the scan mode GAIN is 1.0 and click on UPDATE.

-Move cursor to INSTRUMENT and click. Pull down to MONITOR and click. Make sure ENERGY is selected and click on OK. Read the maximum value of the energy and record it in the calibration log. Click on HALT.

-Move cursor to INSTRUMENT and click. Pull down to SCAN BACKGROUND and click. The SCAN BACKGROUND window will appear. Name the FILENAME according to the instructions for the IRDM software. Set the range from 4000 to 450 reciprocal centimeters and the number of scans to at least 30. When the parameters are correct, click on OK. The instrument will begin scanning the background.

-When the background is complete, raise the hood on the bench of the FTIR and place an IR spectrophotometer polystyrene calibration film in the sample holder. Record "polystyrene" on the calibration log under STANDARD.

-Move cursor to INSTRUMENT and click. Pull down to SCAN SAMPLE and click. The SCAN SAMPLE window will appear. Name the FILENAME the same way as before when naming the background. Set the parameters the same as well. When the parameters are correct click on OK. The instrument will scan the sample and upon completion the computer will ask if you wish to overwrite the background. Click on OVERWRITE.

-Move the cursor to PROCESS and click. Pull down to PEAK TABLE and click. Set the THRESHOLD at 2.00 %T, START at 4000 1/cm, end at 450 1/cm, and select FIND PEAKS. Click on OK.

-Look for the reference band that corresponds to the highest wavenumber peak for polystyrene (3082.18 1/cm) and record it in the calibration log. If the recorded value is less than +/- 0.3 1/cm away from 3082.18 1/cm then the instrument is calibrated and needs no further adjustments. If the instrument should need

adjusting, refer to the FTIR user manuals.

-Produce and store a hard copy.