Name of Procedure:

Infrared Spectrophotometry
Mattson Galaxy 2020 FTIR with software

Suggested Uses:

Collection of quantitative or qualitative data for the identification of controlled and noncontrolled substances.

Apparatus Needed to Perform Procedure:

Mattson Galaxy 2020 FTIR spectrophotometer
PC with a suitable printer/paper
Potassium bromide (infrared grade)
Wig-L-Bug grinding mill
Stainless steel vial and ball
Hydraulic press
Vacuum pump and tubing
Power conditioner
Plotter/pens or printer/ink cartridge
Paper
Spatula
Agate mortar and pestle
Potassium bromide salt plates and holder
Pellet holder
KBr pellet die (13mm)
Polystyrene film standard
Thermometer

Calibration of Mattson Galaxy 2020:

1. Scan background.

2. Place polystyrene film into sample area of instrument.

3. Scan polystyrene film.

4. Print spectrum scan of polystyrene film standard.

5. Record and mark wave numbers 2849 cm^{-1}, 1942 cm^{-1}, and 906 cm^{-1}.

Note: The monthly calibration IR polystyrene scan will be filed and maintained by the IR Coordinator as set forth in the Drug Chemistry Policy and Procedure Manual.

Preparation of Sample for FTIR Analysis:

1. Place approximately 1 milligram of sample and approximately 100 milligrams of potassium bromide in the capsule.

2. Grind mixture in Wig-L-Bug and transfer to pellet die assembly.

3. Press pellet die assembly (under vacuum) in pellet press and remove pellet.

4. Place pellet in pellet holder.

5. Check background and obtain new background if needed. (Scan empty sample area to acquire data into background region.)

6. Place sample pellet holder in sample area of instrument and scan to acquire data.

7. Data can now be processed in any number of ways including: flattened, abexed and rescaled.

8. Print completed scan and compare to known reference standard.

Safety Concerns:

Make sure capsule is **firmly seated** in Wig-l-Bug before operating apparatus. **Do not exceed** 10 tons of pressure in the pellet press. Read manufacturer's instructions and warnings before operating the Wig-L-Bug or pellet press.

Application of Procedure on Evidence

1. Before using the Mattson Galaxy 2020 with computer software, read and become familiar with the operating manuals provided with each. These guidelines can be used to obtain a spectrum, however they are not the only way to obtain a spectrum. This procedure is not a substitute for the manuals. For more detailed information, read the manuals provided with the instrument and software.

2. **OBTAINING A BACKGROUND SPECTRUM:** Once the instrument is turned on type **ALT + I** (initialize) keys to determine proper communication between computer and the optical bench.

   Then type **ALT + B** key to obtain background. You will obtain a background scan in a few seconds.

3. **OBTAINING YOUR SPECTRUM:** Please prepared sample in pellet holder and place in beam compartment of instrument.

   On top menu bar, click on System with left mouse button to pull up data acquisition line. Click on that using left mouse button.

   Type in **ALT + S** to open field to enter your case # or file # for that sample. Type **ENTER**.

   Sample spectrum will then appear on Screen. To perform data manipulation of scan, click on **SYSTEM** in menu bar and then click on **FIRST** to give you access to library or peak integration, etc.

4. **PRINTING YOUR SCAN:** Click on **PLOT** on tool bar. Then click on **PLOT** again to obtain hard print copy of scan.

Literature References:

Mattson Galaxy 2020 Users Guide, Mattson Instrument Corp, Revised 1989.

Moffat, A. C. Ed., **Clarke's Isolation and Identification of Drugs**, 2nd. Ed., The Pharmaceutical Press, 1986.

Mills, III, Terry and Roberson, Conrad J., **Instrumental Data for Drug Analysis**, 2nd Ed., Vols. 1-5, CRC Press, Inc., 1993.

Silverstein, R. M. And Brassler, Clayton G., and Terence C. Morrill, **Spectrometric Identification of Organic Compounds**, New York, Wiley, 1991.

Pouchert, Charles J., **The Aldrich Library of Infrared Spectra**, Aldrich Chemical Company, 1981.