Perkin Elmer 2000 FT-IR Spectrometer

Energy Check

At the beginning of each day the FT-IR is in use, the energy will be monitored prior to collecting any infrared data.

A. Start-up and calibration:

1. Fill dewar with liquid nitrogen by filling the funnel 2 times. Wait approximately two minutes (turn away from spout) and wait for burp. Fill up the funnel 2 more times. Replace the cap and close the lid to the dewar. ***NOTE:*** *Be careful not to overflow and spill nitrogen on the microscope or the detector.*

2. Turn on the computer and load Spectrum for Windows. (Spectrum for Windows User's Reference manual can be used as a guide)

3. Turn on the microscope (The power switch is located behind the microscope. The illuminator switch is turned on separately and is located in front of the microscope) The top knobs on the microscope are used for focussing the aperture only. Once the aperture is in focus, there is no need to touch this knob. The bottom left knob is used for focussing the sample. The bottom right knob "correction" is to focus the condenser. (I-Series FT-IR Microscope User's Reference may be a useful guide)

4. Once Spectrum for Windows is loaded it is necessary to initialize the instrument on the internal detector (MIRTGS). To check the detector goto **S**etup, **I**nstrument, then click on **Beam** to verify which detector is loaded.

5. Initialize the instrument by clicking on **Init**.

6. Once the instrument initializes, check the internal energy. Goto **I**nstrument, **M**onitor, and choose **Energy**.

7. Record the energy in the FT-IR logbook.

8. Next, check the energy of the external detector. First, change the detector by going to **S**etup, **I**nstrument, then click on **Beam** to verify which detector is loaded. Click on the microscope to load the external detector.

9. In order to monitor the external energy, make sure the 100µ aperture is in place. Also, make sure there is nothing on the stage. To check the energy goto **I**nstrument, **M**onitor, and choose **Energy**. It may be necessary to adjust the condenser.

10. Record the energy in the FT-IR logbook.

Wavenumber Calibration

Running the polystyrene standard will be done on a monthly basis on the last Friday of the month.

1. The wavenumber calibration is checked on a monthly basis with the Infrared Spectrometer Polystyrene Calibration Film (0.38 mm thick) manufactured by Perkin Elmer.

2. After initializing the instrument and monitoring the energy, change the beam to the internal detector.

3. First collect a background spectrum. Make sure to use 4 cm^{-1} resolution and 16 scans.

4. Next, place the calibration film into the sample area (see p.35 of *Spectrum 2000 User's Reference* for diagram).

5. Next, check the peaks of the polystyrene sample. You can simply label the peaks or generate a peak table.

6. To check the wavenumber calibration use 3082.18 cm^{-1} as a reference band (per manufacturer's guidelines). This number should be "0.3 cm^{-1}.

7. Record the reference band in the FT-IR logbook.

8. If the instrument needs to be re-calibrated go to the **Setup** menu and choose **Instrument Setup** (see p.122 of *Spectrum 2000 User's Reference* for detailed instructions) and then click on the wrench icon (**Adjustments**).

9. Click on the wavenumber calibration icon and choose **Calibration Band**.

10. Enter the expected position in the **Expected Position** box (this should be 3082.18 cm^{-1} for the Polystyrene standard).

11. Enter the Observed Position of the Reference Band in the **Observed Position** box and choose **OK**.

FT-IR Maintenance Log

Please record any maintenance done to the FT-IR in the maintenance log. This includes re-aligning the instrument, adjusting the wavenumber calibration band, etc.