BEGINNING A SESSION

1. Make sure the IR path is clear (Sample compartment empty).
2. Access the software by entering UFIRST on the keyboard and [ENTER].
3. Activate the spectrometer from the standby mode:
   press the standby button on the instrument keypad
   press the enter button to initialize if prompted by the display.

ENDING A SESSION

1. Put the spectrometer in standby mode
   press standby again when prompted.
2. Turn off the monitor.
There is a demo program to demonstrate the concept of how the central component of the FTIR (the interferometer) works. Access the program from the C prompt as follows: (If you are in UFIRST hit F8 to exit.)

- type `CD` and [ENTER] to get to the main directory and the C:\ prompt
- type `C:\CD\DEMO` and [ENTER]
- then type `DEMO` and [ENTER] and the program will start.

Throughout the demo, the following commands apply:

To pause, [F10]
To continue, space
Abort demo, [ESC]

From the main menu select [1] General Instructions or [2] Introduction to FTIR.
INFRARED SPECTROSCOPY

PURDUE UNIVERSITY INSTRUMENT VAN PROJECT

MATTSON FTIR
INSTRUCTIONS FOR THE STUDENT OPERATOR

OBTAINING A SPECTRUM

If the FTIR is in standby mode, see notes under "BEGINNING A SESSION".

1. Scan Background press [F1] scan, then [F2] background
   make sure the sample compartment is empty
   press [F2]

2. Scan Sample
   press [F1] sample
   type in a filename and [ENTER]
   (Use your three initials, if you are running more than one
   sample add a 1, 2, etc. after your initials.)
   type in a title and [ENTER]
   Use the name of the compound or identity of sample.
   put your sample into the IR sample chamber
   press [F1] scan

3. Plotting the Spectrum
   press the top button (picture of a circle with a line) to turn on
   the plotter, the green light should be on
   insert paper into the plotter up to the white index line
   press the second button from the top (picture of two rollers with
   a piece of paper in between) and let go as soon as the
   rollers grab the paper
   press [F3] plot on the keyboard
   when the plotting is done, press the roller button again to release
   the paper
SUPPLEMENTARY PROCEDURES

Search To search the library for a match to your spectrum:
return to math option in the main menu
press [F4] math
press [F4] search twice and the closest match will display first
Use [F2] and [F3] to see other options.
[F1] Report will list the twenty best matches in order.
Use the gray [+ ] to toggle between displays.

Chart To display overlay of functional group location:
return to math option in main menu
press [F4] math
press [F5] chart
Use [F3] or [F6] to see options one line at a time.
Use PgUp or PgDn to see one page at a time.
Use the → ← arrows to display wavenumbers of specific peaks.

Expand Use the four direction arrows to position the crosshair cursor at a corner of the area to be enlarged.
Press [Insert] to activate the expand function.
Use the arrows to circumscribe the selected area and [ENTER].
Pressing [DELETE] will reduce area back to the original size.
To subtract reference spectrum from sample spectrum, a reference spectrum must already have been made and saved. Both sample and reference must be the same type (e.g., transmittance).

Display spectrum of sample on screen.

Press [F3] file option from the main menu
press [F2] reference
press [F2] load

type in name of reference to be subtracted

Return to math option in the main menu
press [F4] math

press [F4] subtract

The screen will show the sample spectrum at the top, the reference spectrum in the middle and the result of the subtraction operation at the bottom.

Use [F1] factor to select proportion of reference subtracted
Use [F2] delta for the amount to increase or decrease factor

Once subtracted, to display the result, [F8] return, toggle [gray+]
WARNING: DO NOT PLUG IN UNTIL THE MIRROR TRANSPORT IS UNLOCKED

START-UP: DESTINATION SET-UP

1. Unlock the mirror transport device by turning counterclockwise (inside top cover)

2. Attach base to monitor and arrange components.

3. Check cable connections.
   - spectrometer to computer (com 2) (remains connected)
   - plotter to spectrometer (plotter) (remains connected)
   - monitor to computer (connect)

4. Check desiccant indicator. (should be blue) (actual dessicant crystals are black when dry and brown after absorbing moisture)

5. Make sure the path. (sample compartment) is clear

6. Turn on the computer and access the software (C:\UFIRST). Have a student data disk in the A drive when going to ufirst. (A drive empty when turning on computer)

7. Activate the instrument and bring to operational mode.

8. Check signal tune on the FTIR. (only occasionally)
press **tune** on the instrument control pad
adjust peak to near maximum value only if necessary
press **stop/reset** to exit tune procedure

9. Run a sample scan.

10. Plot the sample spectrum.

11. Leave the instrument in **standby** mode or ready to operate.

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**SHUT-DOWN: FOR REMOVAL AND TRANSPORT**

1. Park the heads on the hard drive; type "park" and [ENTER].

2. Turn off and unplug all devices.

3. Lock down mirror transport system AFTER instrument is unplugged.

4. Check the desiccant indicator.

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**HANDLING FILES**

Student data files are all stored on the A drive, therefore data files will only be deleted from the A:\ prompt.

1. Access the A drive from DOS; type "A" and [ENTER].

2. To delete all files in a directory.

   Access the working directory
For example type "\data\3" to access the data 3 directory

Type `del *.*` and `[ENTER]` (the space after the `del` is necessary)

3. To delete all transmission (ras) spectra or absorbance (abs) spectra.

From the working directory, type `del *.* ras/p or del *.* abs/p` and `[Enter]`

4. To delete only one file from a directory.

From the working directory, type "del filename.type/p and [ENTER]
(for example, del benzene.ras/p)

Other Helpful Items

1. To format a disk you must have a C prompt.
   Type; "C:\FORMAT A:"

2. Technical Problems with Software - call Jeff Troya at Mattson: (608) 831-6186