


This guide obtains just brief information. In case you need detailed instructions, read the OEM manual.

FTIR–CHEMLAB (Bruker Vertex 70V + Hyperion 3000)

Standard operation procedure (ATR)

1. Plug in the vacuum pump underneath the table. The cord is labeled.
2. Turn on the instrument using a small black switch in the back of the instrument next to the power cord.
3. Start the PC and the *Direct Control Panel* (DCP) in a web browser – the control panel is stored offline in the instrument and could be accessed via the link: <http://10.10.0.1/dcctrl01.htm>
If the connection is not established, try again in few minutes.
4. Click on the “1 Evacuate instrument” order in the DCP to pump down the whole instrument, wait until a stable pressure (< 1 hPa) is reached.
5. Start the OPUS software. Login credentials could be found on the sticky note next to the screen.

6. Start the *Advanced Data Collection* window by clicking on the  icon.
7. Load the *Experiment* procedure (*Advanced Data Collection* window -> *Basic* panel).
The default procedure for the ATR mode with a diamond crystal is called ATR-Di.xpm **Do not save changes to this procedure!**
8. Confirm your selection by clicking on *Accept and Exit*.
9. Start again the *Advanced Data Collection* window, go to *Check Signal* panel and press *Full scan*. Confirm the peak position by clicking on *Save Peak Position*.
This step could be skipped if the previous user has used the same setup of the spectrometer (ATR-Di). Otherwise, the measurement will not start.

10. The instrument is ready for use.

11. Name the sample (*Advanced Data Collection* window -> *Basic* panel -> *Sample description*) and select the folder for saving (*Advanced Data Collection* window -> *Advanced* panel -> *Path*).
12. Set the measuring parameters using the *Advanced Data Collection* window -> *Advanced* panel.
The standard spectral range for ATR is 4000–600 cm⁻¹. Use 1 cm⁻¹ resolution and at least 32 scans for high quality spectra. **Do not change the hardware settings of the spectrometer!**
13. Check that the instrument is fully pumped and press *Background Single Channel* to measure the background (*Advanced Data Collection* window -> *Basic* panel). Wait for the background to be collected.

The progress of data collection is shown on the status bar at the bottom of the OPUS software.

It is possible to use a stored background though collection of a new background prior to each measurement is always recommended!

14. Vent the Sample compartment (**not the whole spectrometer!**) and load the sample.

If, however, you accidentally vent the optical bench, evacuate the whole instrument as in step 4. **Never leave the optical bench vented longer than necessary!** There is a risk of serious damage to the instrument!

The ATR crystal is located in the middle of the metal disk. Optionally, use the grip for solid samples to assure a good contact with the ATR crystal. Fully tight the grip – it could not be overtightened as it goes loose above the maximum force moment. Do not use the grip for liquid samples.

No corrosives are allowed for diamond crystal!

15. Put the sample compartment lid back on.

The line on the top side of the lid has to be aligned with the line on the spectrometer's cover. Make sure that the lid is properly seated, lower the grip handle if necessary. If the lid does not seal properly, check the rubber sealing for dirt.

16. Evacuate the Sample compartment, wait for the final pressure < 1hPa.

Always measure the sample and the background under the same vacuum conditions (i.e., same pressure)!

17. Press *Sample Single Channel* to measure the spectrum (Advanced Data Collection window -> Basic panel). Start the measurement by clicking on the *Start Measurement* button in the prompt below the graph.

18. Vent the sample compartment. Remove the sample from the sample compartment and gently wipe the ATR crystal with IPA.

19. Pump the sample compartment.

20. Repeat the steps 11-19 for another sample.

When finished:

21. Make sure that all samples have been removed from the sample compartment.

22. If not pumped already, pump the instrument and wait for the final pressure < 1hPa.

23. Go to *Advanced Data Collection* window -> *Basic* panel and **load the *nosource.xpm* experiment method**. Confirm your selection by clicking on *Accept and Exit*. You can check that there is no signal in the *Check Signal* panel (do not press Full Scan).

24. Close the OPUS software.

25. Switch the pumping system into **Standby** using the *Direct Control Panel* in the web browser. The *Desired state* of the vacuum will change to *Not Defined*.

26. Turn off the computer.

27. Turn off the instrument using the small black switch in the back of the instrument.

28. Unplug the vacuum pump.