Jasco J-810 Circular Dichroism System

Location: Edison-Lecks 11

notes imported from Chem wiki, last update 2013.

How It Works and What It Does

Directions for Use

CD calendar instructions (In order to use the instrument and to be added to the Chem CD calendar, you must be trained):

There is a ‘Chem CD’ Google calendar. Trained users can request access to this calendar. After training users can send a message to Sara Kunz, kunz@brandeis.edu requesting access to the Chem CD calendar. The request must be from a Brandeis email account and should reference the person who did the training. View the calendar here: Chem CD. You can’t add events to this calendar directly; you will need to click on the Google Calendar icon at the top of the page to go to your personal Brandeis Google Calendar account. Or you can log into your Brandeis Gmail account and locate the calendar under ‘Other Calendars’.

Instructions for use of the CD

Turning the instrument ON:

1. Turn on Nitrogen gas flow.
2. Turn on the computer and open the program “Spectra Manager”
3. Turn the power switch on the CD to “ON” position (note: this will not turn the lamp on)
4. Double click on “Spectrum Measurement”
5. The computer will begin to count down from 300 seconds. After that the lamp will turn on (look for green light on CD) and the computer will go through a system check. (note: HT Voltage check may report “Too high” If that happens, click on the Ignore button to proceed, make sure that HT Voltage does not exceed low 300’s V)

Turning the instrument OFF:

1. Leave the Nitrogen gas ON.
2. In the “Spectrum Measurement” software go to the menu Control  Light Source. Uncheck “Lamp On” box and click OK. This will turn the lamp off.
3. Quit the software and gather your stuff.
4. Now, turn the Nitrogen gas off.

Using the Peltier temperature controller:

1. Turn on the water bath and make sure that the temperature is set to 20°C.
2. Turn the power switch on the Peltier controller (located between the PC and CD) to “On” position.
3. Press the “Start” button on the Peltier controller.
4. In “Spectrum Measurement” software go to the menu Measurement  Accessory
5. Choose “Temperature” and change the option to “JASCO Peltier Type (Single, RTE On)”
6. You can now use Control  Accessory menu in the “Spectrum Measurement” software to set the temperature.
7. The metal temperature sensor should either placed in one of the slots on the cuvette holder. The lefthand slot puts the sensor into the sample, the righthand slot puts the sensor alongside the cuvette. Also, make sure that the top of the cuvette holder is in place allowing nitrogen flow over the sample.
8. When you are done power down the Peltier controller and the water bath.

If you have any questions contact : Anne Gershenson x62548 (62580) or Alex Milshteyn x62326

Measuring fluorescence using the CD spectrometer:

Cuvettes: You will need a cuvette with at least 3 polished sides. The side of the cuvette used for fluorescence detection should face towards the back of the CD spectrometer.

1. Excitation or Emission Spectra Only
   a. Choose “Ex/Em Measurement”
b. Under the Measurement menu, choose "Accessory"
c. Select the "FM0421 monochromator" and click OK
d. Go to the Parameters menu choose:
i. Excitation or Emission scan
   ii. The sensitivity: the sensitivity is set by the voltage on the detector attached to the fluorescence monochromator.
   Possible voltages range from 0 to 1000 Volts, the higher the voltage the more sensitive the measurement. **Please do NOT run the detector at the maximum 1000 volts! This will lead to early detector death.** Try an initial sensitivity of 500 V and take a spectrum. Raise the voltage if your fluorescence signal is weak or lower the voltage if your signal is very high.
   iii. Set the rest of the parameters as you desire.
2. **Simultaneous Far UV CD & Fluorescence Excitation Spectra**
   a. Go to "Ex/Em Measurement" and set up an excitation scan as described in (A). Once the signal looks good, proceed to step 2.
   b. Choose Spectrum Measurement
   c. Under xxx, set ch. 3 or ch. 4 to fluorescence. You will see the CD signal, HT (voltage) and fluorescence all displayed on the screen.

**Tips for Use**

1. **Do not use the CD without training!** Contact Sara Kunz to arrange for training.
2. Always leave the nitrogen stream on when the instrument (specifically the instrument lamp) is on! It gets rid of ozone deposits on the optics, which will ruin them. Once the instrument is fully shut down, wait a few minutes and only then turn the nitrogen off.
3. The lamps should **never have > 1000 hours of use.** The CD software should be monitoring this but it doesn't. Use the log book to keep a running total of how many hours the lamp has been used. **Be sure to add to the running total of time on the lamp on the signup sheet.**
4. Photomultiplier Tube (PMT) voltage should **never exceed 900 V!** Click here for more info.
5. The PC associated with the CD is currently broken. (as of 12/14/07).
6. Samples to run a standard spectrum are in the drawer beneath the CD.
7. The CD can also do fluorescence but no one has tried this yet.

**Contact Point Information**

1. Contact Sara Kunz for more information.

**Main Users of Instrument**

1. Chem 59B, Petsko and Xu groups

**Web Resources**

Jasco Web Site

-- AnnemarieRomWeisenbach - 12 Dec 2007, kunz 22 Mar 2010