

(H-3207) Instructions for the Varian Cary UV-Vis 50

Instructor: Machine setup

1) The procedure is for use from the desktop only. Make sure the desktop is powered on.

Username: user

Password: user

Make sure that students are using the "User" and not "ggcuser" or "ggcchem".

[Note: Both spectrometers may already be logged in and ready to use.]

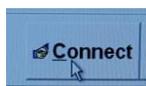


Figure 1: Varian Cary UV-Vis spectrometer setup in H-3207.

2) The spectrometer should be powered on as long as it is connected to the desktop.

3) Open the Varian UV software using the appropriate icon on the desktop:

- For full spectrum scan, click "Scan" (**Figure 2A**).
- For the CHEM 1212K Equilibrium lab, click on the shortcut to "Equilibrium Lab" (**Figure 2B**) for a fixed scan at 450 nm.
- You may need to click "Connect" at the top of the screen. You should hear the spectrometer power scan as the software opens.



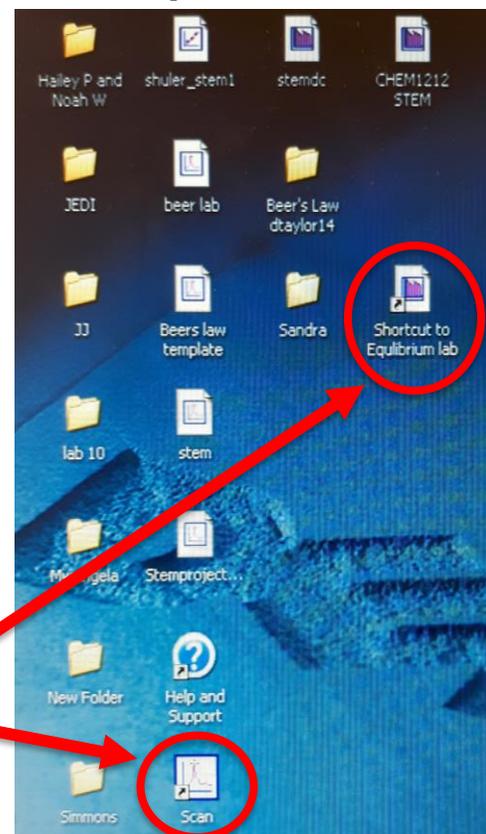
(FOR ADVANCED USERS ONLY: You can change settings from the "Setup" tab on the left-hand side of the window at this point.)

4) If you are going to have students save their data on the computer, make a folder with your name on the desktop.

Figure 2B

Figure 2A

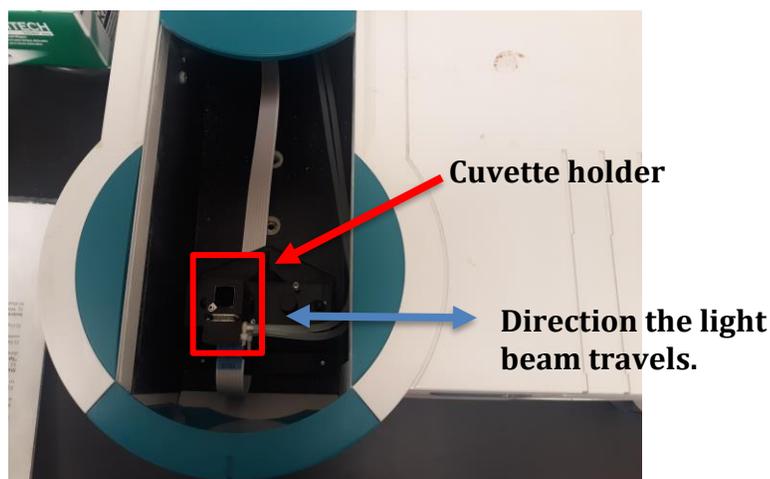
Figure 2: Screen capture of desktop.



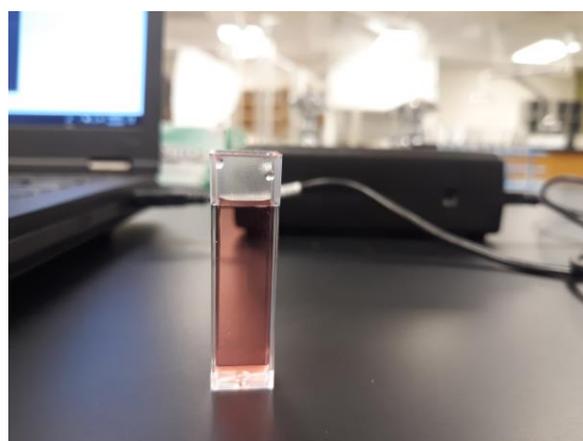
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Student: Cuvette/Sample Handling

- 1) Slide the green cover back to open the chamber (**Figure 2A**). The beam travels $\leftarrow \rightarrow$ parallel with the instrument.
- 2) Cuvettes should be filled approximately $\frac{3}{4}$ full with your solutions (**Figure 2B**). Place the cuvette in the beam path so that the clear side of the cuvette faces the beam. The cuvette should go into the sample holder without a lot of force. You may need to wiggle it or adjust the angle of approach slightly to get it to go in. **Close the green cover prior to taking your measurement.**
- 3) To remove the cuvette, use one hand to hold the sample holder down and gently pull up on the black tab on the right side of the cuvette holder.



A



B

Figure 2: (A) Picture of open chamber with cover moved back. (B) Image of a cuvette $\frac{3}{4}$ full of test sample.

Student: To run your samples

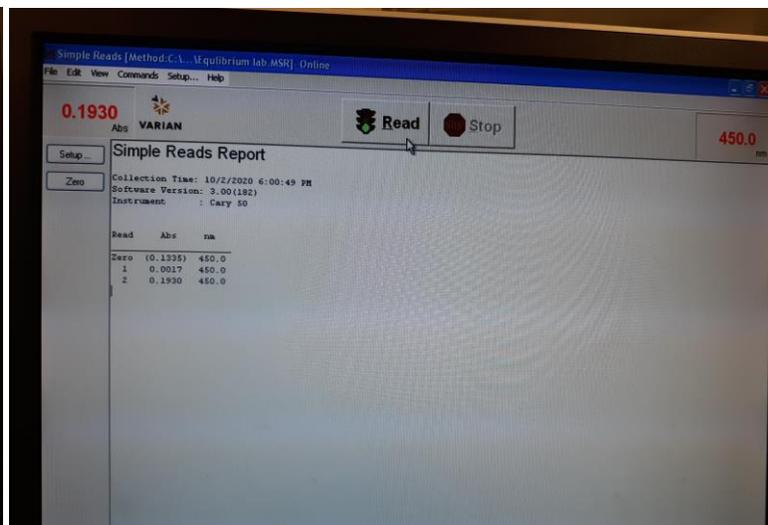
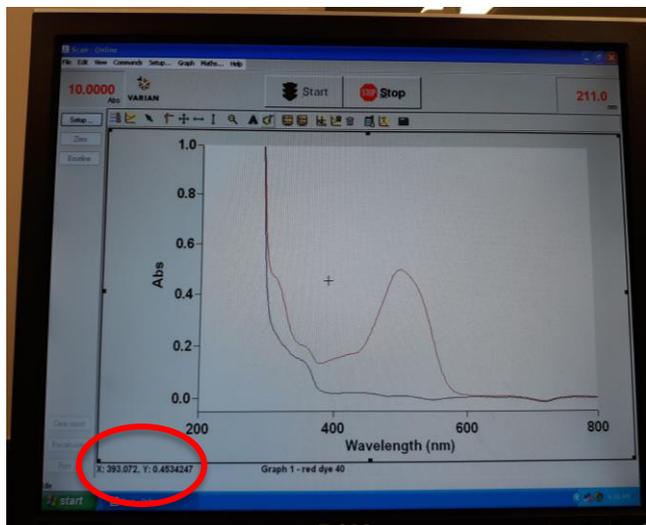
- 1) If performing the CHEM 1211K Food Dye project, go to: File \rightarrow Open Method and choose "STEM Project Template". It should be in the "STEM Project Data" folder found on the desktop.

(FOR ADVANCED USERS ONLY: You can change settings from the "Setup" tab on the left-hand side of the window at this point.)

- 2) Place your blank (distilled water for aqueous solutions) in the cuvette holder and select "Baseline" from the left-hand side of the window. Click "OK" in the dialog box that pops up.
 - For CHEM 1212K Equilibrium lab, place your blank (solution of $\text{Fe}(\text{NO}_3)_3$ in HNO_3) in the cuvette holder and select "Zero".

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- 3) After you have measured your blank, place your first sample in the cuvette holder. Click “Start” at the top of the window (**Figure 3A**). Save your file in the folder created by your instructor for your class. Make sure that the file name will allow you to clearly recognize your data later.
 - For CHEM 1212K Equilibrium lab, click “Read” at the top of the window (**Figure 3B**).



A **B**
Figure 3: (A) Scan mode with data curves. (B) Fixed mode with data.

- 4) You should now be prompted to name the first sample that you want to scan. Give your sample a descriptive name (i.e. “Yellow Skittle”). Make sure that your sample is loaded and ready to measure before hitting “OK”. You should see the spectrum being plotted as the data is collected (**Figure 3A**).
 - For Fixed mode, absorbance data will appear on the screen. You will need to record the order in which you collect your samples (**Figure 3B**).
- 5) After the first sample is finished, you will be prompted to name your next sample. Load your next sample, give it a descriptive name, and hit “OK.” Never hit “OK” until you have the next sample loaded.
- 6) Once you have measured all of your samples, hit “Finish.”
- 7) In Scan mode, moving the cross cursor to the top of peaks will display wavelength and absorbance data in the lower left corner of the screen (**Figure 3A**).
 - **Advance option: Click on the arrow icon in the toolbar (Figure 4), and chose the trace option and cursor will trace the curve. Data will be visible in lower left corner.**

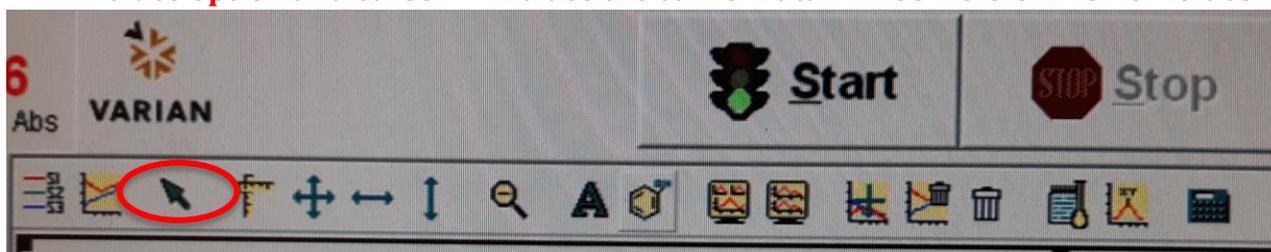


Figure 4: Toolbar options for advanced data analysis.

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Student: To save and export data

- 1) Go to: File → Save Data As. **Under the “Files of Type” dropdown box, choose the option “Spreadsheet Ascii (*.CSV)”**. If you do not select this file type, you will not be able to read your data on your computer!
- 2) Save your file in the folder created by your instructor for your class. Make sure that the file name will allow you to clearly recognize your data later.
- 3) Copy your data file (the .CSV file) onto a jump drive and transfer to your computer.

Instructor: End of Day Procedures

- 1) When completed for the class/session/day, simply close the “Scan” program. You do not need to shut down the computer or the spectrometer.