Vernier LabQuest Instructions

Using SpectroVis Plus

Calibrating the Spectrometer

1. Use a USB cable to connect the Spectrometer to your LabQuest. Turn on the LabQuest.
2. Calibrate the Spectrometer.
   a. Place the blank cuvette (filled about ¾ full of the suggested blank solution) in the Spectrometer.
   b. Choose Calibrate from the Sensors menu. The following message is displayed: "Waiting 90 seconds for lamp to warm up." After 90 seconds, the message will change to "Warm up complete."
   c. Select Finish Calibration. When the message "Calibration completed" appears, select OK.
3. Determine the optimum wavelength (λ_{max}) for examining the highly colored solution under investigation.
   a. Empty the blank cuvette and rinse it twice with small amounts of the first standard solution. Fill the cuvette about 3/4 full with the same standard solution and place it in the Spectrometer.
   b. Start data collection (►). A full spectrum graph of the solution will be displayed. Stop data collection (■). The wavelength of maximum absorbance (λ_{max}) is automatically identified.
   c. Record the λ_{max}

Beer's Law Studies: Absorbance vs Concentration

Before beginning you should have all of the standard solutions, prepared. Make sure they are all mixed well. To help with Option B, go ahead and write the molarity of colored species in decimal form instead of scientific notation.

1. Tap on the Meter tab. On the Meter screen, tab Mode.
2. Change the mode to Events with Entry. Enter "Concentration" as the Name and "mol/L" as the Units. Select OK.
3. If prompted to choose, you may discard the previous run.

Depending on your comfort with the LabQuest device you have one of two options below:

Option A (faster):

4. Rinse the cuvette twice with ~1 mL amounts of the next solution. Place a cuvette of solution in the cuvette slot. Start the data collection (►).
5. After the Absorbance reading stabilizes, write it down in your lab notebook next to each solution's concentration.
6. Repeat Steps 4-5 for each solution.
7. After all Absorbance data has been collected, stop data collection (■).

Option B (the LabQuest does the graph for you, requires a USB drive to transfer the data):

4. Rinse the cuvette twice with ~1 mL amounts of the next solution. Place a cuvette of solution in the cuvette slot. Start the data collection (►).
5. After the Absorbance reading stabilizes, tap ***Keep***. Enter the concentration of the solution and select ***OK***.
6. Repeat Steps 4-5 for each solution.
7. After all data points have been collected, stop data collection (■).
8. To get a linear curve fit for your data, tap ***Analyze*** then ***Curve Fit***. Choose ***linear*** from the drop down Curve Fit menu. Record the correlation coefficient and equation of the best fit line.
9. ***Save a copy*** of the raw data onto the LabQuest unit, and record your file name.

To save your data on a USB drive:

1. Disconnect the spectrometer, insert a USB drive, find and open the file you want to save.
2. Under File, Export, select the USB icon, then select Export. It will save as a .txt file that you can import into Excel.