Appendix D: Instructions for Using the MicroLab Spectrophotometer

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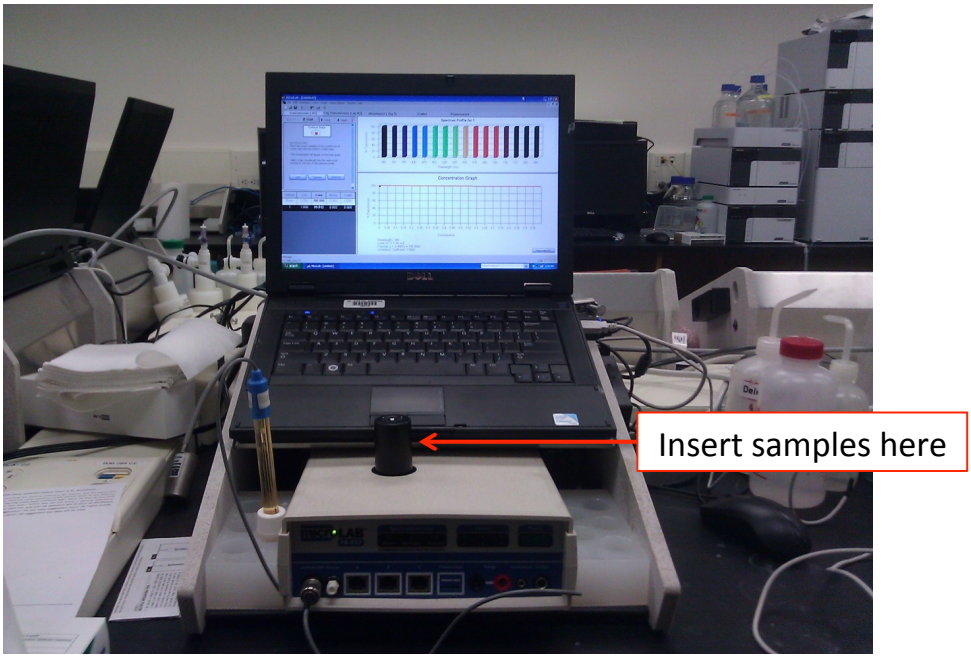
Recommended Resources

- Website ~ Visible and Ultraviolet Spectroscopy
  http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/Spectrpy/UV-Vis/spectrum.htm

Background

The MicroLab can collect information relevant to your experiment such as transmittance, absorbance and scatter data on 16-wavelengths (360, 383, 395, 430, 470, 502, 525, 555, 590, 635, 660, 700, 740, 775, 880, and 940 nm) and allows the student to apply Beer's Law in the laboratory. Samples should be loaded into vials prior to using the spectrophotometer.



Directions

1. Select a MicroLab station and if it asks you to login, login using your regular CSUB login. (If that does not work, try logging in as "chemuser" with the password "278".)
2. Double click on the blue and yellow μL icon that is labeled "Shortcut to MicroLab" on the desktop.

3. The program will prompt you to choose an experiment type, select "Spectrophotometer". You may enter an experiment name here if you wish to and click "OK".
4. Calibrate the machine.
    a. Wipe the outside of the vial thoroughly with a Kimwipe while holding the blank sample by the cap.
    b. Remove the black cylindrical cover from the MicroLab station and insert the blank into the machine, replacing the cover afterwards (NOTE: Consult your instructor if you are not sure what to use as a blank).
    c. Click on the prominent "Read Blank" button on the left side of the screen.
    d. Remove the blank from the machine when the calibration is complete, making sure that you replace the black cylindrical cover.
5. Collect data.
    a. Wipe the outside of the vial thoroughly with a Kimwipe while holding the sample by the cap.
    b. Remove the black cylindrical cover from the MicroLab station and insert the vial into the machine, replacing the cover afterwards.
    c. Click on the "Add" button to record a new sample.
    d. The program will prompt you to enter a "Sample ID" and "Concentration" which can always be edited after your export the data.
    e. Remove your sample once the data is collected and remember to replace the black cylindrical cover.
6. Replace and/or remove data if necessary.
    a. It is optional to replace a data point you are not satisfied with by selecting it and following the same procedure as in step 4 only click the "Replace" button instead of the "Add" button.
    b. You can delete any data point by selecting it and clicking the "Remove" button.
7. View your data.
    a. On the top of the screen you will see a bar which gives you an option to view graphs of the data you collected as either Transmission [%T], Log Transmission [Log %T], Absorbance [-log T], Scatter or Fluorescence.
    b. You can also specify which wavelength you want to view by clicking on its associated bar displayed on the graph.
8. Export your data.
    a. You can export your data by clicking the "File" menu and under "Export Data As".
    b. Select "Comma-Separated-Value text file (MicroLab, MS Excel, etc.)" which can be read by both MicroLab and MS Excel.