Technique Primer

The SpectroVis Plus Spectrophotometer

What is a Spectrophotometer?

A spectrophotometer is an instrument capable of measuring the absorbance or transmittance of a sample at a selected wavelength or range of wavelengths. A tungsten light bulb or other light source in the instrument produces a "white light" that is focused through the sample and a diffraction grating then disperses the wavelengths from the lamp's continuous spectrum. The dispersion of the light strikes an array of detectors (one for each wavelength) and then the amount of light detected is recorded. The signal given by each detector is used to calculate the absorbance at each wavelength; the computer displays the signal as a plot of absorbance versus wavelength called the *spectrum* of the sample.

Figure 1. The SpectroVis Plus Spectrophotometer

Handling Cuvettes

1. The spectrophotometer cuvettes must be handled carefully to obtain good results.
2. If the cuvette is not dry, condition the cuvette several times with the solution to be measured.
3. The outside of the cuvette must be perfectly clean and dry before inserting it in the instrument. No liquid droplets, fingerprints, etc.
4. Each cuvette has two clear sides and two striped sides. When inserting a cuvette, be sure the light source is directed through the **clear** sides.
5. When using two cuvettes, it is very important to use one cuvette for the reference solution and a second cuvette for the sample solution. They may be marked on the striped side with a pencil so they are never interchanged.

Operating Instructions

1. Turn on the Lab Quest 2 device and make sure that the SpectroVis Plus spectrophotometer is properly connected to the device. Also, make sure that the device is connected to the computer through a USB slot.

2. Double click on the Logger Pro 3.8.5 icon on the desktop. A screen similar to Figure 2 should appear if the Spectrophotometer is properly connected.

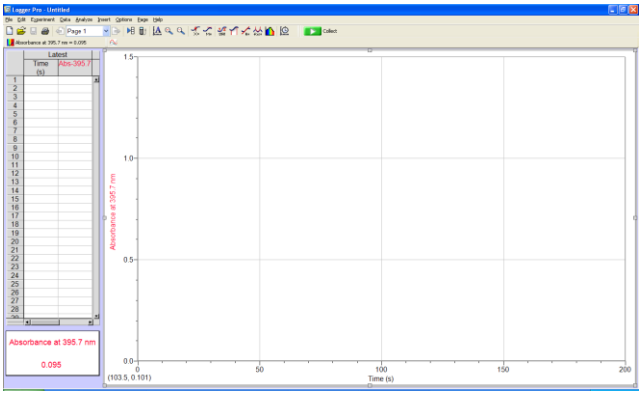

Figure 2. Logger Pro 3.8.5 screenshot showing absorbance vs. time

3. Place the cuvette containing the solvent or reference solution into the sample compartment and click the collect button to begin collecting data.

4. Hit the stop button after you want to finish collecting data and record the results from the graph on the screen.