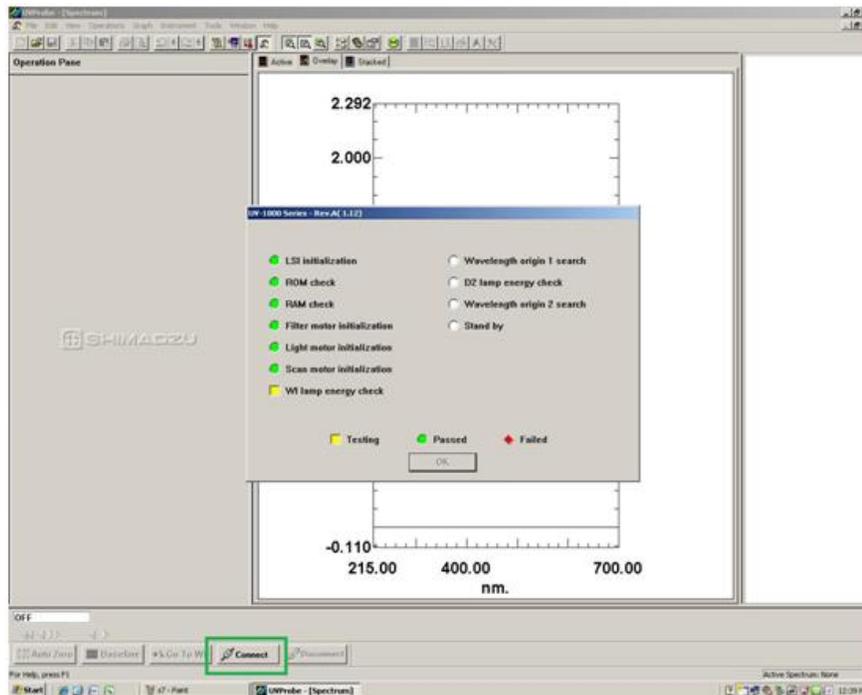


VII. Equipment

H. UV-Vis

This document tells you how to take the UV-Vis spectrum of a solution. For other uses, please refer to the manual.

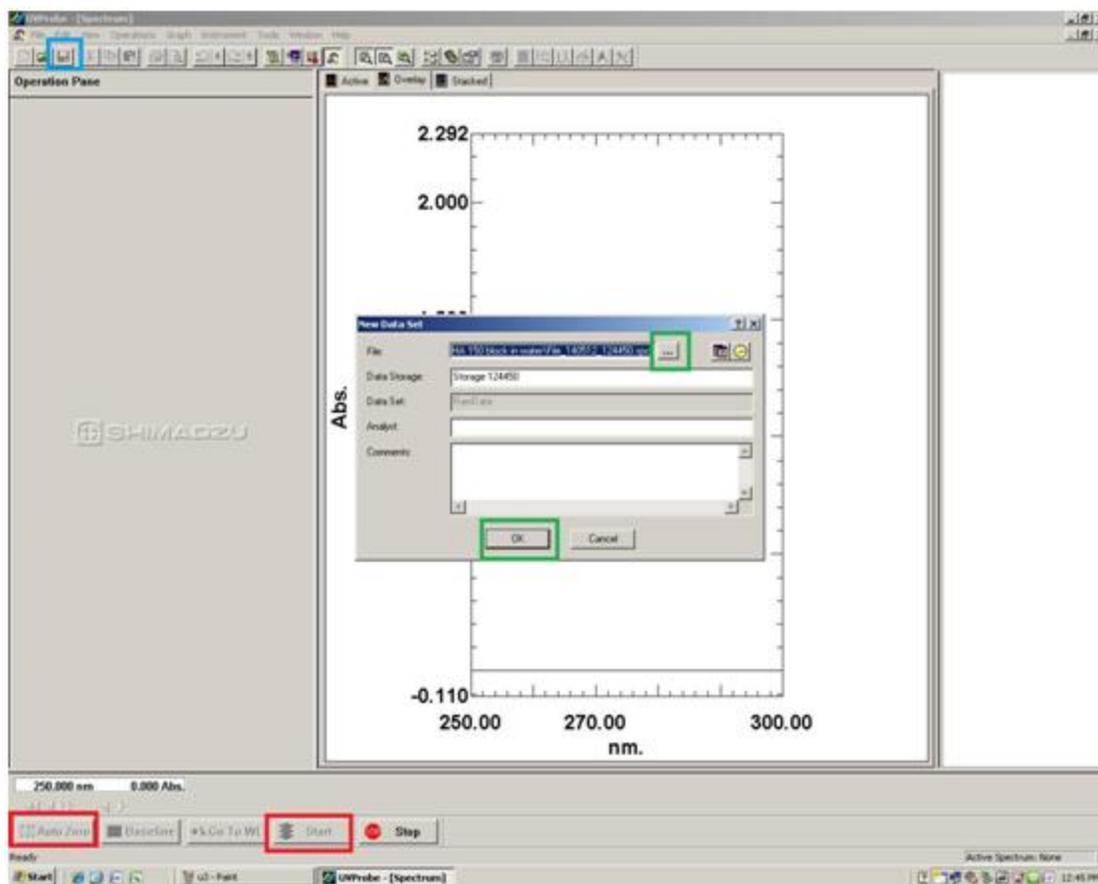
1. Switch on the machine, and sign in the logbook.
2. Log into the computer using your UA net ID.
3. Open the UVProbe software.
4. Click Connect (green box). It takes time for the equipment to warm up.



5. Load your background solution. To load the cell, press along the red arrow and insert your cell at the green box.



6. In the software, click method (red box) and input the wavelength range. A 700 nm wavelength is usually large enough for most samples as a start wavelength. The end wavelength depends on cutoff length of solvent. Suggested value: water 200, methanol 210, and chloroform 245. Others can be found at http://www.utsc.utoronto.ca/~traceslab/UV_Cutoff.pdf . Click Baseline and OK.
7. After scanning background, take out your cell, dump the solvent, and use your sample solution to wash the cell for three times. Fill the cell with your sample solution and load the cell into the machine.
8. In the software, (if you believe the sample does not have any absorbance at maximum wavelength, click Auto Zero-Red box.) click Start (red box). After finish scanning, select a fold and name your data file. Then click OK. (green box). Do not forget to save your file (blue box). To see original data, click the button on the right of Method button.

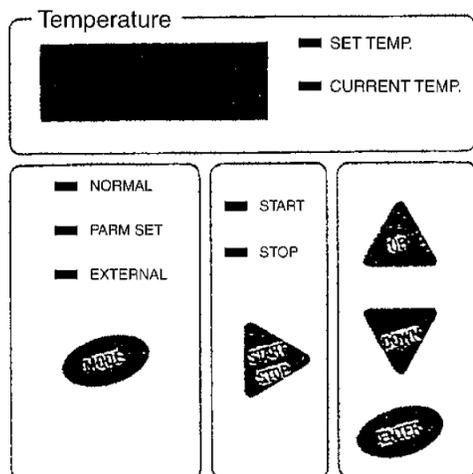


9. Take out your sample. If you have more samples of same solvent to test, wash the cell with next sample solution for 3 times before use. If it is the last sample, wash the cell with pure solvent for 3 times, and leave the cell to dry in air. If you have samples of a different solvent, wash the cell with pure solvent and take background again.
10. Switch off equipment, close software, log out of computer, and sign out the logbook.

Temperature Control Experiments

The UV-Vis is outfitted with a SHIMADZU S-1700 temperature control module that requires a constant temperature bath to operate properly. To set up a temperature-dependent UV-Vis analysis:

1. Re-set the temperature safety by turning the dial fully clockwise and pressing the RESET switch.
2. Turn on the RTE-101 constant temperature bath by pressing OFF/ON bottom. The bath is pre-set for 20C. DO NOT adjust the temperature knobs.
3. Adjust the temperature safety to the halfway mark. It will take some time for the bath to cool down to 20C.
4. Turn on the S-1700 using the power switch on the back of the unit.
5. In order to prevent condensation from forming on the cuvette, remove the clips from the air-pump desiccator and plug the unit in. There is no on/off switch for the air-pump. The pump is already adjusted for optimal dry airflow into the UV-Vis.



6. For a constant temperature experiment, the temperature may be programmed directly into the S-1700 unit by setting the MODE to NORMAL, entering the desired temperature, and selecting START. The display will switch between the current and set temperature.
7. For more advanced temperature experiments, use the Tm Analysis Program