# UV-Visible Guide

UV-1800

Notemp 3006D

#### Yun Zhu 07/27/2022

Turn on the monitor, computer, spectrophotometer and isotemp system (if needed).



Spectrophotometer (Shimadzu UV-1800) Isotemp System (Fisher Isotemp 3006D) (- 20 °C to +200 °C)

#### Fluid Choice

- -20 ~ 7 °C : ethylene glycol/DI water, 50/50 by volume
- $7 \sim 80 \ ^{\circ}\text{C}$ : deionized water
- >80 °C: Dow 200-50 silicon oil
- (when using silicon oil, make sure the working area contains no water)



- The spectrophotometer will go to PC control automatically when the initialization is done.
- Don't press ANY button.



Select Windows Start>Programs> Shimadzu>UVProbe.

Double-click the UVProbe icon on the desktop.





Enter your user name and password to log in the system.

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- 1. Select Window>Spectrum or click the Spectrum button to open the Spectrum module.
- 2. A module must be active before the spectrophotometer can be connected.
- 3. Click on the "Connect" icon in the bottom.



Go to "Instrument">"Configure". In Connection, "Communications Port(COM5)" should be OK. Check both the lamps in Maintenance. Most of the time they are default options.

- Select "Method" From the "Edit" pull down menu:
  - In "Measurement"; select your Wavelength Range of interest. In Scan mode, select the mode of your interest.
  - In Instrument Parameters, select the right Measuring Mode in the list.
  - In Attachments, click on "None".

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Place **both** the UV cells (with white Teflon cap) filled with only solvent in the cavities. Cover the cavities by square shaped metallic head.

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- Click on Baseline at the bottom to perform a Baseline Correction.
- Save the file in .smd mode for the solvent in subfolder "Method" in the folder "UVProbe". (Optional)
- For the measurement of the sample, place the cell containing the sample solution in front side (close to the operator), click the Start button to initiate the scan.

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- To save the data, Select File>Save As; Save the file as .spc extension in your named folder in the "Data" folder.
- Alternatively the file can also be saved in .txt extension.

#### Precaution

- Prepare the sample solution **in advance**.
- All the manipulations, dilution should be done inside the adjacent fume hood.
- The maximum volume of the cell is **3.5** mL.
- Before switch on the spectrophotometer nothing should be in the cavity.

#### Extra Precaution

- After the measurements the cells should be **thoroughly cleaned** with proper solvents, dried and kept in drawer.
- Clean the cells when the sample is a suspension, colloidal or sparingly soluble solution. In these cases particles deposit on the cell wall to interfere the measurement of the next user.
- After all the measurements switch off the spectrophotometer, recirculating chiller and make an entry in the log book.
- In formation for Calculation: path length of cell = 1 cm.



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#### Cutoff wavelength

- Every solvent has a UV-vis absorbance cutoff wavelength. The solvent cutoff is the wavelength below which the solvent itself absorbs all of the light.
- When choosing a solvent be aware of its absorbance cutoff and where the compound under investigation is thought to absorb. If they are close, chose a different solvent.

Solvent	UV absorbance cutoff $\lambda_c$ (nm)
Acetone	330
Benzene	280
Chloroform	245
Diethyl ether	218
Ethyl acetate	255
Methanol	210

# Thank you!