

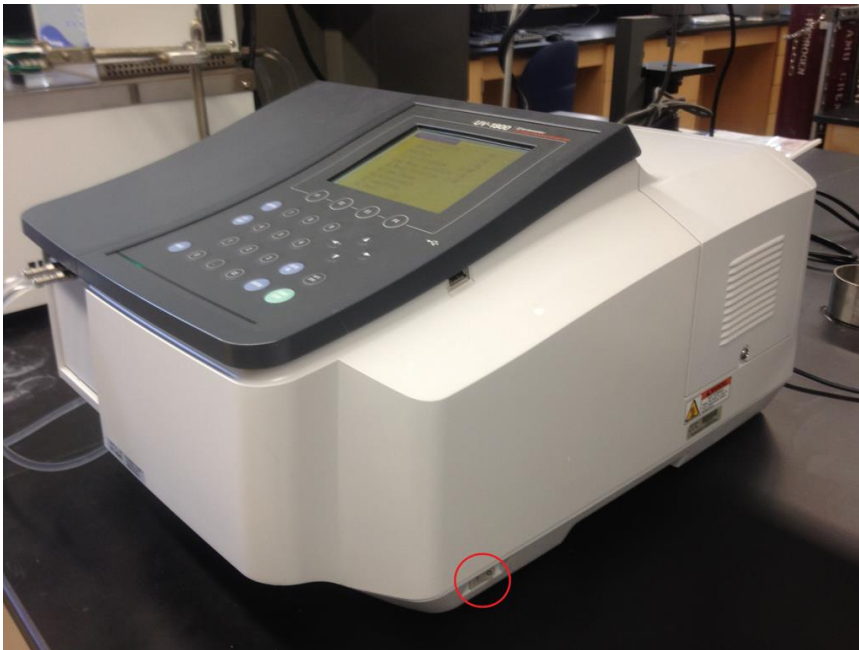
# *UV-Visible Guide*



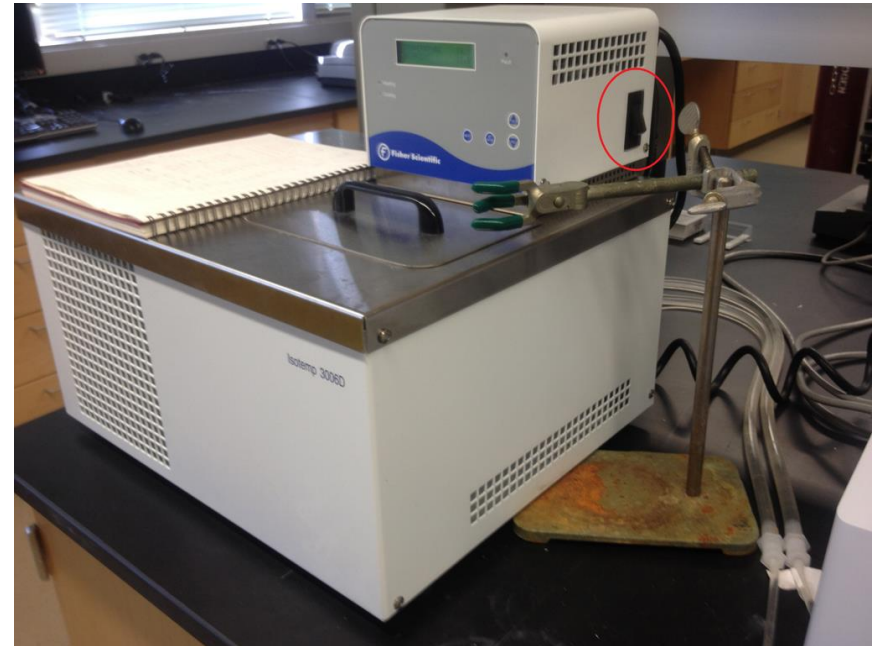
Yun Zhu  
07/27/2022

# Step 1

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



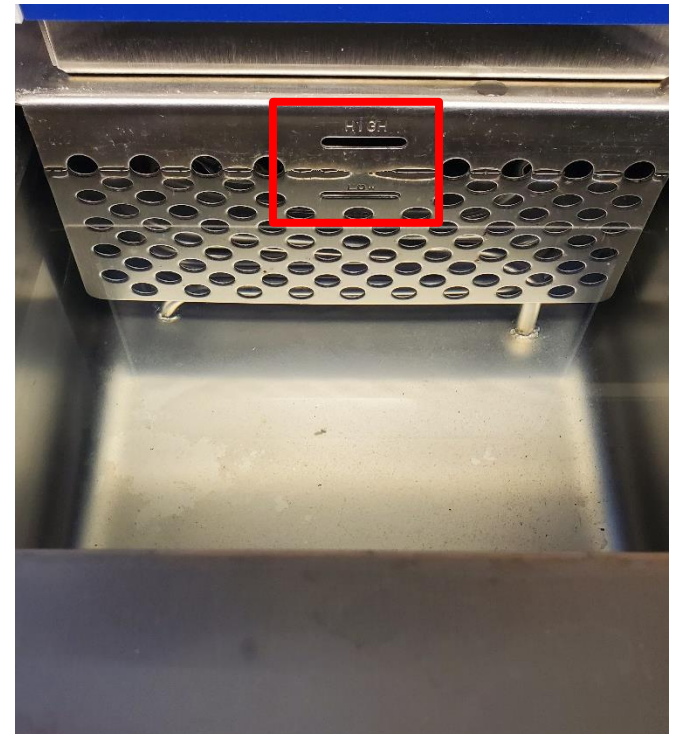
Spectrophotometer  
(Shimadzu UV-1800)



Isotemp System  
(Fisher Isotemp 3006D)  
(- 20 °C to +200 °C)

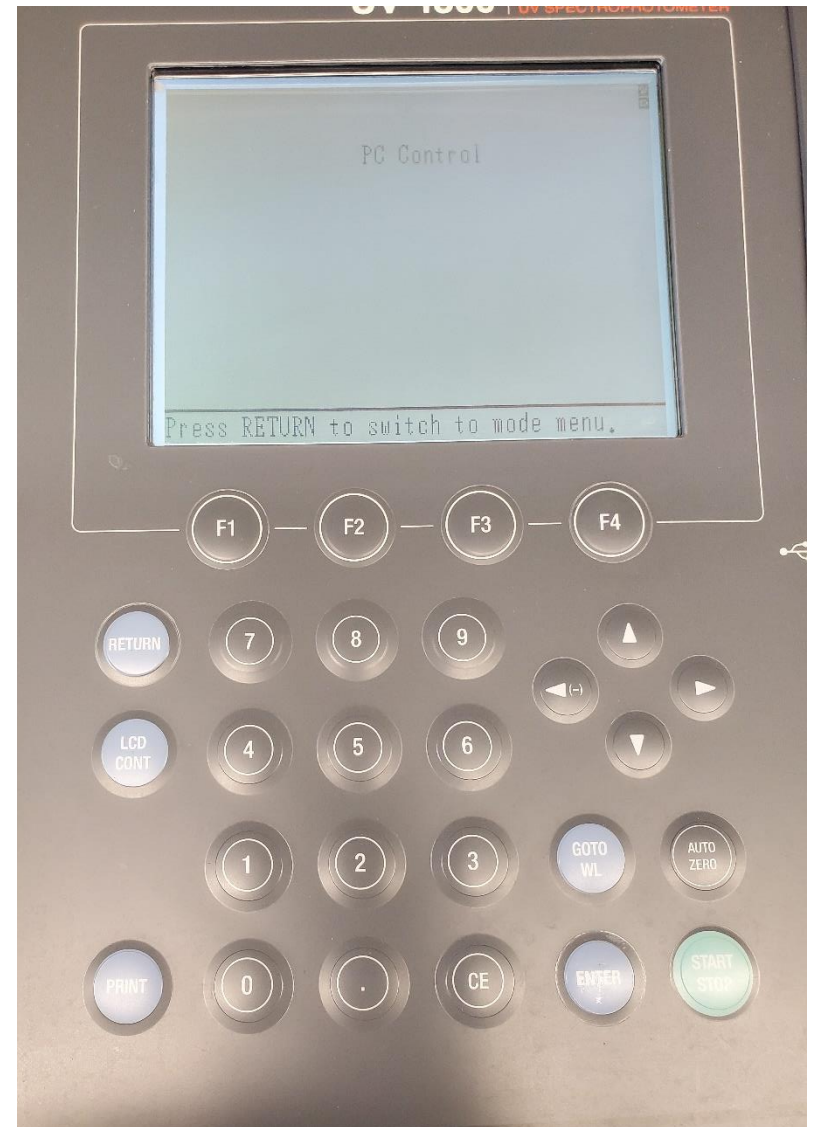
# Fluid Choice

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



# Step 2

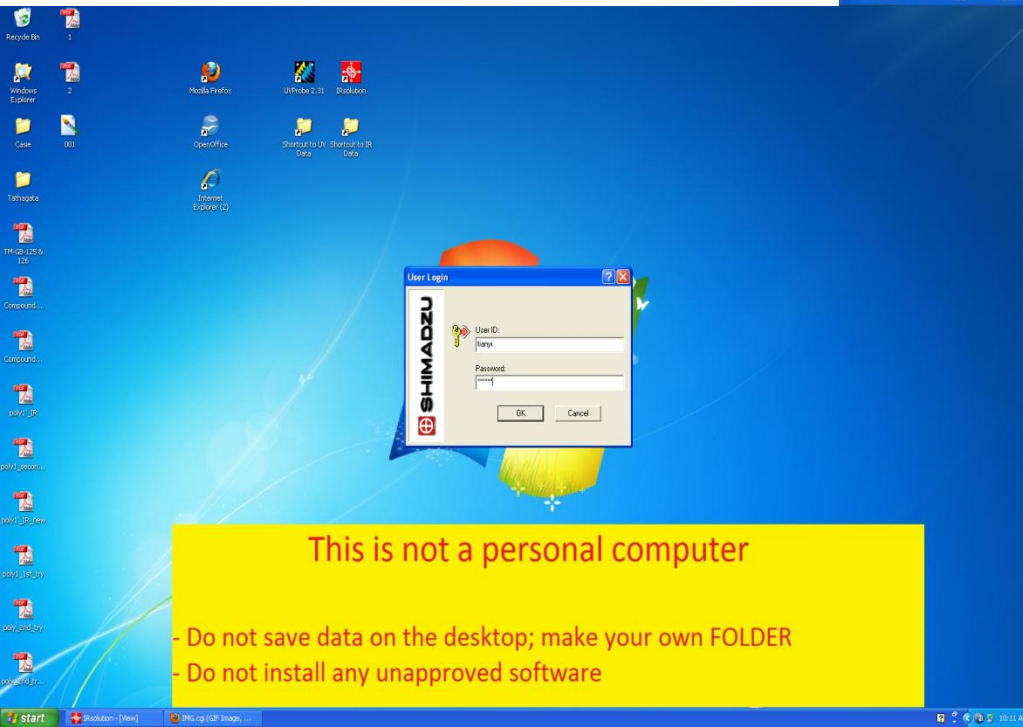
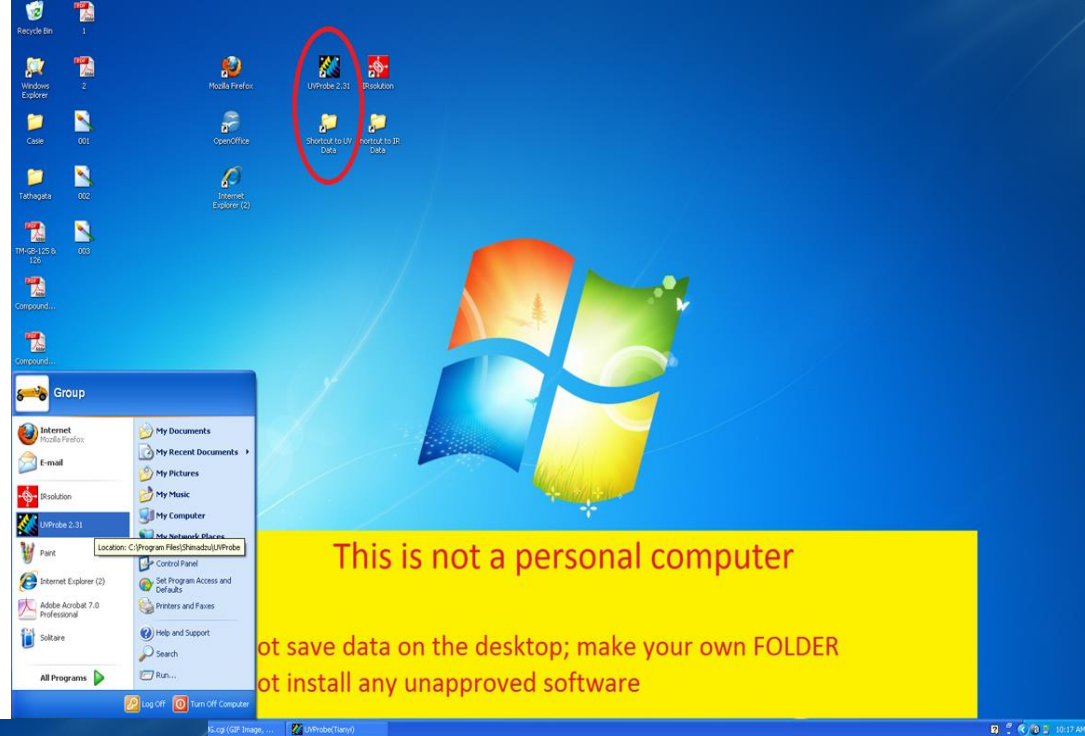
- The spectrophotometer will go to PC control automatically when the initialization is done.
- Don't press **ANY** button.





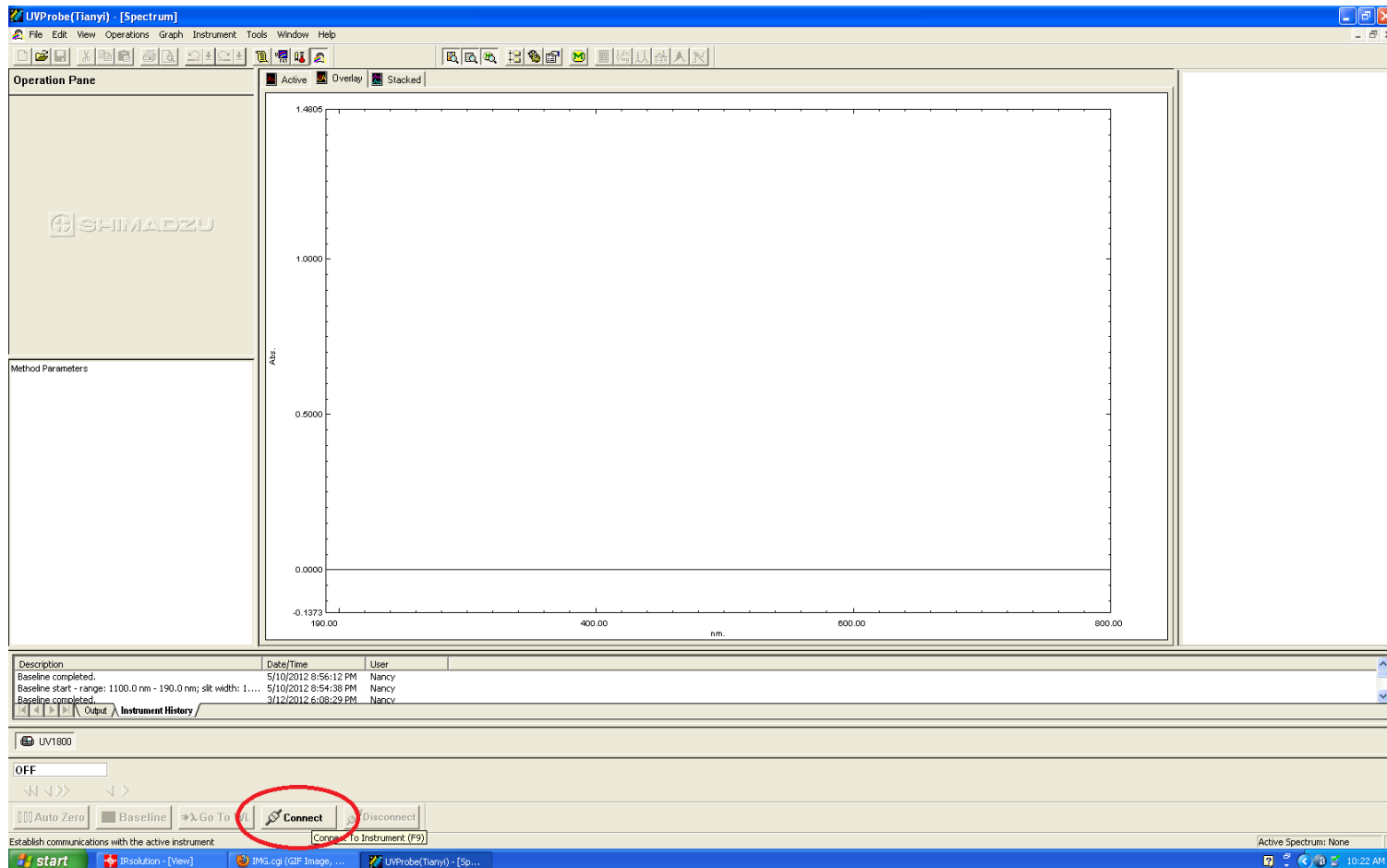
Select Windows Start>Programs>Shimadzu>UVProbe.

Double-click the UVProbe icon on the desktop.



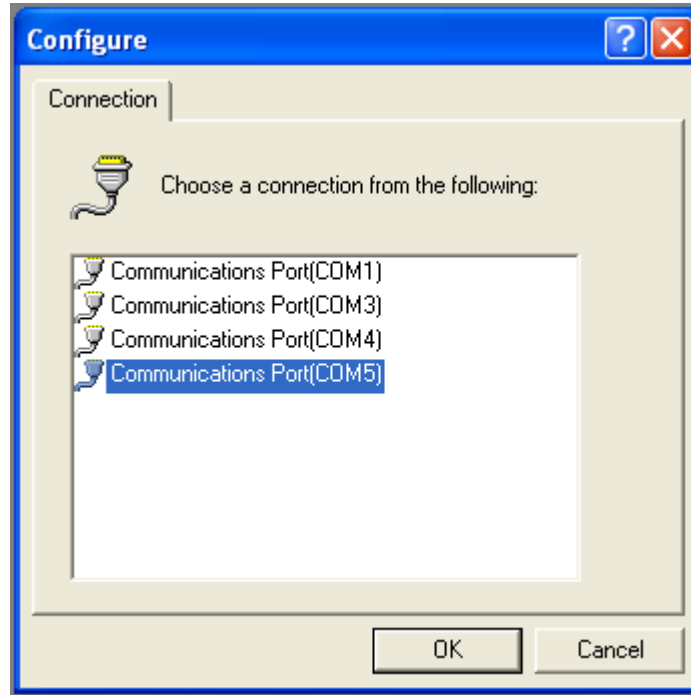
Enter your user name and password to log in the system.

# Step 3



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.

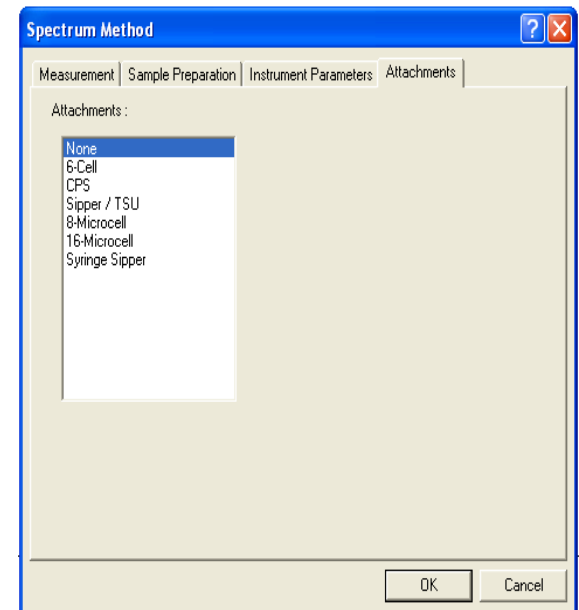
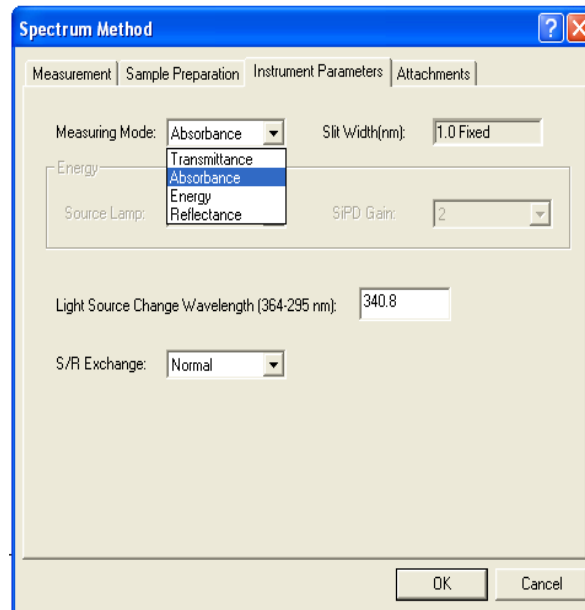
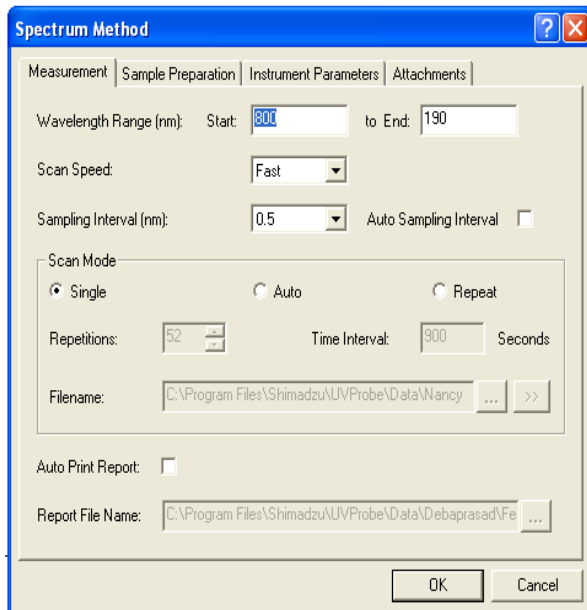
# Step 4



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.

# Step 5

- 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".



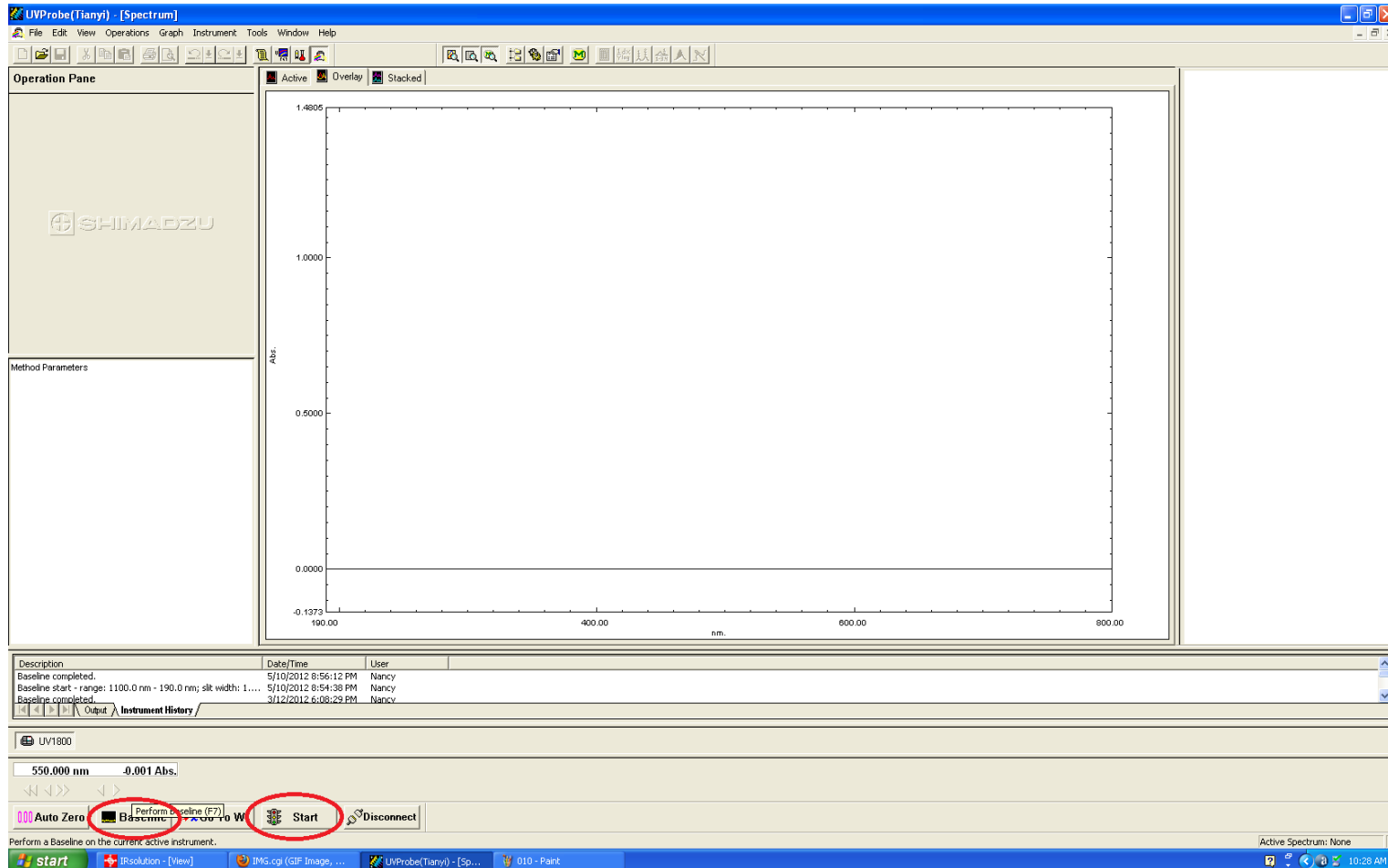


# Step 6



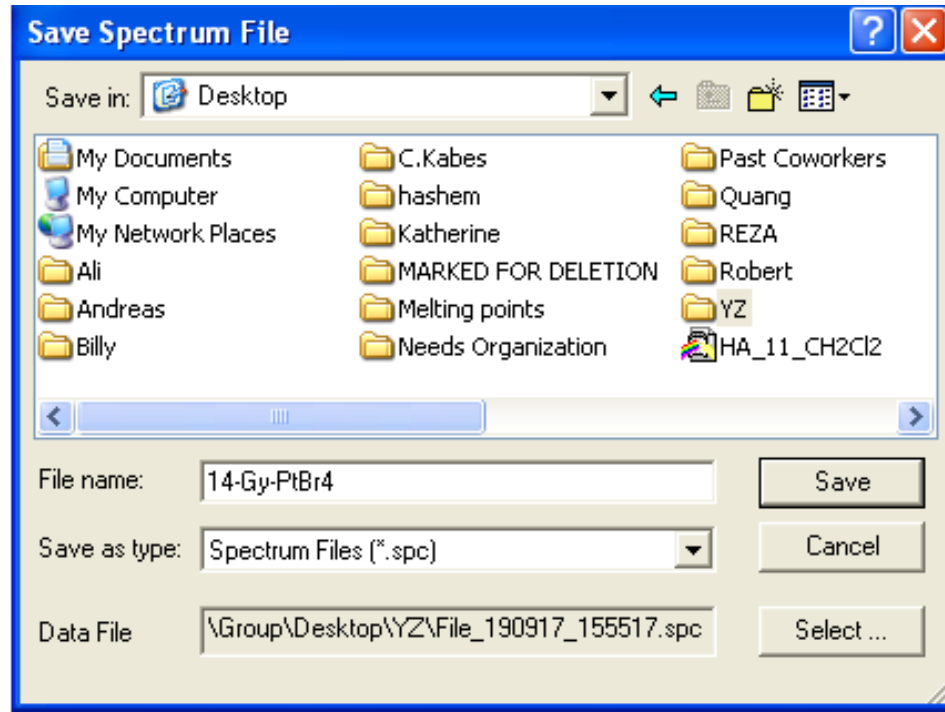
Place **both** the UV cells (with white Teflon cap) filled with only solvent in the cavities. Cover the cavities by square shaped metallic head.

# Step 7



- 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.

# Step 8



- 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.





# 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!***