Shimadzu UV-1700 UV/Vis Spectrometer
Updated November 14, 2017

Instrument instructions can be found at:
http://academic.bowdoin.edu/chemistry/resources/instructions.shtml

If you have any problems with the instrument or would like to get trained, please contact
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Using UV with Computer

1. Protocol

a. **Read instructions carefully before using instrument**. Reading the bold sentences in each category will tell you what you need to know to run the instrument.
   i. Bullets are under the bold sentences when more detail is required.
   ii. At the end of the instructions is a frequently asked questions/troubleshooting section.

2. Startup Procedure

a. **Turn on instrument.**
   i. Allow instrument to warm up for fifteen minutes.
b. **Turn on computer and login** (use your Bowdoin account).
   i. First time users only.
      1. Create folders to store your data, method, and sequence.
         a. Open Windows Explorer.
            i. (Start > All Programs > Accessories > Windows Explorers).
         b. Go to Desktop > My Computer > Local Disk (C:) > Program Files > Shimadzu > UVProbe.
            i. Create a data and methods folder.
            ii. Click once on the data folder to highlight it.
            iii. Go to (File > New > Folder).
            iv. Type in your name or initials to name that folder.
            v. Repeat for the methods folder.
      2. Configure a network printer and set it as default.
         a. Make sure you are connected to the Bowdoin network.
         b. Go to Start > Run.
         c. Type in the location of the printer.
            i. Second floor – "\\bradbury\dahlia".
         d. Click OK.
         e. Set printer as default.
            i. Start > Printers and Faxes.
            ii. Right click on printer you just added.
            iii. In the menu, select "Set as Default Printer".

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  c. **Open UV Probe 2.10.**
    i. (Start > All Programs > Shimadzu > UVProbe).
  d. **Give control of instrument to computer.**
    i. On the instrument
      1. After the UV has finished its checks, the Mode screen will be displayed. Press the F4 key (PC Ctrl) on the instrument keypad to give control to the computer.
    i. On the computer
      1. Click on the "Spectrum" icon (far right in menu bar) to open the spectrum window, then click on "Connect" to switch control to PC.
  e. **Enter sample information into UV log sheet.**

3. Create/Edit Method

  a. **Load method** (Edit > Method).
  b. **Edit parameters.**
    i. Measurement Tab.
      1. Set the wavelength range – starting and ending values.
      2. Set scan speed.
      3. Set sampling interval.
      4. Under Scan Mode click Single.
    ii. Instrument Parameters Tab.
      1. Select absorbance as measurement mode.
      2. Click OK.
    iii. Change Y-axis range.
      1. Go to the overlay graph (select tab at top of graph or Graph > Overlay) and click on the minimum and maximum absorbance values.
      2. Enter a new value.
      3. When finished, click anywhere on the screen to get out of this mode.
  c. **Save method** (File > Save As).
    i. Enter file name.
    ii. In the Save As Type list, click Method File (*.smd).
    iii. Click Save.

4. Collect Spectrum

  a. **Perform baseline correction.**
    i. Make sure sample and reference compartments are clear.
    ii. Be sure to "Autozero" before collecting the baseline to get the ABS at 0.000 (Instrument>Commands>Autozero).
    iii. Collect baseline (Instrument > Commands > Baseline).
    iv. When the Baseline Parameter box appears, enter the starting and ending values.
    v. Click OK.
  b. **Insert sample** (front cell holder) **and reference** (back cell holder). Clear sides of the cuvette face left and right.
  c. **Start scan** (Instrument > Commands > Start).

  i. When scan is complete, a New Data Set box will appear.
    1. Files – Click browse and enter a new file name. This is the only thing you will open to retrieve your file.
    2. Storage – Enter a name here. Storage is used for multiple spectra stored in one file.
    3. Data Set – If you manipulate the spectrum, they will be stored as a data set. The original spectrum you collected will be called "RawData".
  ii. Save (File > Save All).
 d. **Remove sample and reference from compartment.**

5. Analyze Spectrum

 a. **Perform peak pick** (Operations > Peak Pick).
  i. The Operations screen will open to display results.
  ii. Right click on the Peak Pick table and make sure Mark Peaks and Show Peaks are selected.
  iii. Adjust peak threshold (if necessary).
    1. Right click on Peak Pick table and select properties.
    2. Enter new threshold value.
  iv. Close Operations screen (View > Operations).
  v. Print peak pick results (File > Print > Current View).

6. Print Spectrum

 a. **Print spectrum** (File > Print).

7. Shutdown Procedure

 a. **Disconnect computer from instrument** (Instrument > Commands > Disconnect).
 b. **Turn off instrument.**
 c. **Log off computer.**

<u>**Using UV without Computer**</u>

1. Protocol

    a. **Read instructions carefully before using instrument**. Reading the bold sentences in each category will tell you what you need to know to run the instrument.

        i. Bullets are under the bold sentences when more detail is required.

        ii. At the end of the instructions is a frequently asked questions/troubleshooting section.

2. Startup Procedure

    a. **Turn on instrument.**

        i. Wait for instrument to go through its initial checks.

        ii. Allow instrument to warm up for fifteen minutes.

    b. **Enter sample information into UV log sheet.**

3. Edit Method

    a. **Edit parameters.**

        i. Select **Spectrum** from **Mode Screen** (2 on keypad).

        ii. Change parameters – press numeric key on keypad that corresponds to the parameter you want to change, change the value, and press enter.

            1. Select measurement mode.

            2. Set scan and y-axis range.

            3. Set scan speed.

4. Collect Spectrum

    a. **Perform baseline correction.**

        i. Make sure the sample and reference compartments are empty.

        ii. Perform baseline correction (F1 on keypad).

    b. **Insert sample** (front cell holder) **and reference** (back cell holder) and close lid.

    c. **Start scan** (Start/Stop button on keypad). **Must be on **Spectrum Screen**.

    d. **Remove sample and reference from compartment.**

5. Analyze Spectrum

    a. **Perform peak pick.**

        i. Select data processing (F2 on keypad). Wait.

        ii. Select peak operation (3 on keypad).

        iii. Print peak pick results (F2 on keypad).

6. Print Spectrum

    a. **Print spectrum (**from **Spectrum Screen)** (Print on keypad).

        i. From the peak pick results, return to **Spectrum**, hit **Return**, wait, hit **Return**

7. Shutdown Procedure

    a. **Return to main screen** (Mode on keypad).

        i. Do not save spectrum (F3 on keypad)

    b. **Turn off instrument.**

Shimadzu UV-1700 Frequently Asked Questions

1. How do I setup the screen to display only what I need?

View > Graph will already be selected (this option cannot be deselected).

    a. **View > Photometer Status.**
    b. **Graph > Overlay.**
    c. **Window > Spectrum.**

2. What are print layouts and how do I use them?

Print layouts are templates used when printing reports.

    a. **Open Report Generator** (Window > Report Generator).
    b. **Open a graph and edit it to display the information you want.**
    c. **Save graph as a new name.**
    d. **Return to spectrum screen** (Window > Spectrum).
    e. **Open Quick Print** (View > Setting) **and select Quick Print tab**.
    f. **Select the Overlay Spectrum Graph.**
        i. Click the Brower button and find the graph you created.
    g. **Click Print Preview to make sure everything is correct** (File > Print Preview).
    h. **Print graph** (File > Print).
    i. **Return Overlay Spectrum Graph to its default.**
        i. Quick Print tab (View > Setting), hit the Reset button.

3. How do I display/delete graphs?

    a. **Display legend** (Graph > Legend).
        i. Open spectra you would like to view.
        ii. Overlay view will show all the spectra open.
        iii. The Active view will only show the spectrum that was most recently opened.
    b. **To delete graphs from the legend box, open** (File > Properties).
        i. Expand the folders until you see the RawData files.
        ii. Select and hit the Delete button to remove. This will remove the spectrum from memory, not from the disk.