

Varian Cary 400 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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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 computer and login** (use your Bowdoin account).
 - i. First time users only.
 1. Create a folder to store your data.
 - a. Go to Desktop > My Computer > Local Disk (C:) > Varian Data.
 - b. Right click to make a “New Folder” with your name.
 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”.
 - b. **Open the Win UV Scan program** (Start > All Programs > Cary WinUV > Scan).
 - c. **Turn on instrument.**
 - d. **After initialization, if top left shows “Scan-Offline”, close the scan window and re-open. It should be “Online”.**

3. Create/Edit Method

- a. **Open Setup dialog box.**
 - i. Click the “Setup...” button to display the Setup dialog box.
- b. **Edit parameters.**
 - i. Select the Cary tab.
 1. Enter X and Y scale information.

2. Set the Ave Time and Data Interval. This will automatically calculate the scan rate.
- ii. Select the Baseline tab.
 1. Select Baseline Correction.
- iii. Once you are finished creating a method, click OK.
- c. **Save method** (File > Save Method As).

4. Collect Spectrum

- a. **Zero the system** (Commands > Zero).
- b. **Perform baseline correction** (Commands > Baseline).
 - i. Save baseline (File > Save As).
 - ii. Enter file name.
 - iii. Choose *.BSW as file type.
 - iv. Click OK.
- c. **Insert sample (front cell compartment) and reference (back cell compartment).**
- d. **Start scan** (Commands > Start).
 - i. A dialog box will prompt you to save your data.
 - ii. Browse to your folder and enter the filename.
 - iii. Choose *.BSW as file type.
 - iv. Click Save.
 - v. Enter sample name.
 - vi. Click OK.
- e. **When scan is complete, remove sample and reference.**

5. Analyze Spectrum

- a. **Perform peak pick** (Graph > Peak Labels).
 - i. Select "X and Y Labels" as label type.
 - ii. Click Apply and then OK.
- b. **Position label boxes.**
 - i. To move labels, move crosshairs to label and click once. A box will form around the label. Click (and hold) the left mouse button and move the label to a new location. Click once outside the label box to finish.

6. Print Spectrum

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

7. Shutdown procedure

- a. **Turn off lamps.**
 - i. Commands > Lamps Off.
- b. **Close Win UV Scan program.**
- c. **Turn off instrument after lamps have cooled down for a few minutes.**
- d. **Log off computer.**

Varian Cary 400 Frequently Asked Questions

1. Why are multiple spectra saved when I go to File > Save As.

- a. When you go to File > Save As, all the traces that are in the current graph window (checked – visible & unchecked – not visible) will be saved.
- b. When you are prompted to save a file before you start a scan, only that trace (the one that will be collected) will be saved, regardless of what else is in the graph window.
- c. In order to save just a single trace and not all the traces, you will have to delete the other traces before saving. See “How to adjust the view of the graph?” for instructions on deleting a trace.

2. How do I adjust how the graph is printed?

- a. Adjust the graph to full screen – Setup and go to the Reports tab. There is a box that has a % Page Height value in it. Change the value to “100” and the graph will be full screen.
- b. Adjust graph orientation – File > Print Setup. Select either Portrait or Landscape.

3. How do I open multiple traces on the same graph?

- a. Go to File > Open Data.

Note: You can only have one *.BSW file open at a time. If you need multiple *.BSW files open, open each individual file and save it as a *.DSW file.

Note: You can have multiple *.DSW files open on a graph, including one *.BSW file.

- b. In the “Open” window, press and hold the Ctrl key while selecting the files you want to open. When finished, put a check in the “Overlay Data” check box and click Open.

4. How do I change trace colors?

- a. Select all traces so they are visible on the graph.
- b. Go to Graph > Trace Preferences.
- c. Highlight the trace you would like to change and right click the mouse button. A shortcut menu will open. Select Change Trace Color.
- d. Select a new color and click OK.

Note: One trace always has to be red (called a focused trace). Therefore, change all the trace colors in the “Trace Preferences” window, but do not change the last one.

Highlight this trace so it will be red, and all the other traces will be the color you selected.

5. How do I print a red trace on a b&w printer?

- a. Right click in the trace window and select Graph Preferences in the drop down box.
- b. Set the Pixel setting to 2 (default is 1). This will widen the trace so that it will appear on a black and white printer. The higher the pixel number, the wider the trace and the darker it appears on the print-out.

6. How do I adjust the view of the graph?

- a. **Deleting a trace** – go to Graph > Trace Preferences and highlight the trace you would like to delete. Right click once on the trace name to bring up the shortcut menu. On this menu select “Delete”.
- b. **Rename a trace** - go to Graph > Trace Preferences and highlight the trace you would like to rename. Right click once on the trace name to bring up the shortcut menu. On this menu select “Rename”.
- c. **Show legend** – go to Graph > Graph Preferences and check the “Show Legend” box. The legend is useful for zooming in on a particular trace. The zoom buttons will expand the focused trace.
- d. **Cursor modes** – go to Graph > Cursor Mode. There are two cursor modes to choose from, one is track and the other is free. Free mode is the normal setting for the cursor; it lets you move around the screen. Track mode locks the cursor on the trace. You can label points along the trace by right clicking the mouse at the point you would like to label. When you right click, a shortcut menu will appear. Select “Add Label”.
- e. **Manually adjust axes scale** – go to Graph > Axes Scale. Enter a scale for either the X axes, Y axes, or both. Enter the low value first, then a “-“, then the high value.
- f. **Automatically adjust XY axes** – go to Graph > Autoscale(XY).
- g. **Automatically adjust X axes** – go to Graph > Autoscale(X).
- h. **Automatically adjust Y axes** – go to Graph > Autoscale(Y).
- i. **Zoom out** – go to Graph > Zoom Out to display all the traces (that are selected in Trace Preferences) in one graph box.
- j. **Add a label** – go to Graph > Add Label to enter text information on the graph. To change the font, click once on the label to select it, right click to open the shortcut menu, and then select “Edit Annotation”. Click the Font button and adjust the settings.
- k. **Toggle the graph display** – Graph > Single/Multi Graph. Will toggle between displaying a single graph or multiple graphs. The single graph that is displayed is the graph in the multi view that is selected.
- l. **Auto arrange graphs** – go to Graph > Auto Arrange Graph. This will resize and position all the open graphs.
- m. **Add a graph** – go to Graph > Add Graph. Will add another graph box.
- n. **Remove a graph** – go to Graph > Remove Graph. Will remove the selected graph box.
- o. **Clear all traces** – Graph > Clear All Traces. Will remove all traces from the graph box, but they will not be gone. You can still select the traces by going to Graph > Trace Preferences.
- p. **Change orientation of peak labels** – Graph > Peak Labels and click on the Peak Label Details tab. Move the slider to one of the four positions.
- q. **Move a label** - click once on the label to select it. Once selected, click and hold the left mouse button and move the box to the desired location.
- r. **Delete a label** - click once on the label to select it, right click to open the shortcut menu, and then select “Delete Annotation”.