

Operational Procedure for Detector Group Spectrometer.

POWER ON:

1. Ensure that all electronics below the dark box are off (the computer does not need to be offline).
2. Open the dark box using the compressed nitrogen control plate on the front of the dark box. Turn the valve to the up position and the dark box will be lifted up and held in place with retaining safety catches. The vertical speed can be regulated by hand.



3. Turn on the power supply for the light source located towards the rear of the dark box.
4. Once the power supply is on press the start button. Observe the lamp and ensure that it has turned on.
IF THE LAMP DOES NOT TURN ON PRESS THE STOP BUTTON IMMEDIATELY.
Wait for five seconds then press the start button again.
5. The lamp should be given between 1 1/2 and 2 hours to warm up.



6. Turn on the control for the filter wheel. The switch is located in the rear of the box on the left hand side.
ENSURE THAT THE FILTER WHEEL IS IN POSITION 1 (CLOSED) BEFORE CONTINUING.
Position 1 and 2 are the only functional settings currently. Position 2 is the open condition and should only be used when the dark box is closed.



7. Turn on PMT high voltage. Turn on the power supply using the switch in the lower left corner and set the top switch 500V.
8. The PMT should be given between 1 ½ to 2 hours to warm up.



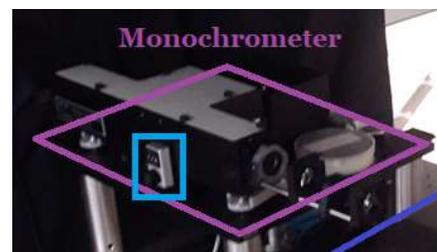
9. Turn on the DAQ system with the switch on the lower left of the power supply on the front.



10. Turn on the controller for the horizontal translation stage motor. The switch for the controller is on the rear in the lower right corner.

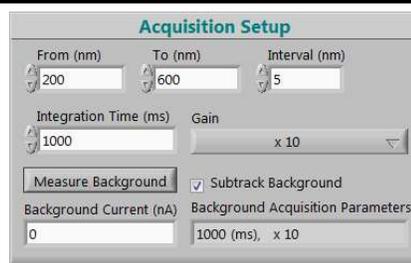


11. Turn on the computer station next to the dark box. The computer will already be one, but asleep. Wake it up and use the login and password located on the bottom edge of the computer screen. The username is in the blue label and the password is in the yellow.
12. On the desktop of the computer click on the spectrometer icon and it will open a LabVIEW GUI.
13. The monochromator will initialize. Click Ok and the GUI will request its current set wavelength. This can be found on the side of the monochromator in a small three digit rotary dial. It will also request the current position of the translation stage which should be 0 mm when the controller is turned on.



TAKE DATA SET:

14. In the Acquisition Setup section of the GUI set the desired range of wavelength that will be used. The minimum effective wavelength is 150nm and should be placed in the “From” area and the maximum wavelength is 795nm and should be placed in the “To” area. There is a physical limit on the maximum wavelength and going above 800nm can cause physical damage to the monochromator.

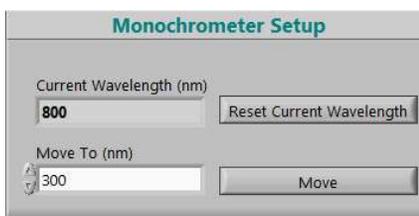


Acquisition Setup

From (nm)	To (nm)	Interval (nm)
200	600	5
Integration Time (ms)	Gain	
1000	x 10	
Measure Background	<input checked="" type="checkbox"/> Subtract Background	
Background Current (nA)	Background Acquisition Parameters	
0	1000 (ms) x 10	

- DO NOT SET THE MAXIMUM ABOVE 795nm.**
15. Set the “interval” to 5nm which will set the interval between measurements.

16. In the Monochromator Setup put 525 in the “Move To” box and click move, this will set an easily visible wavelength.

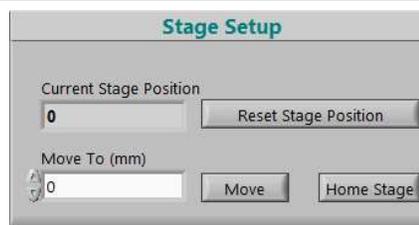


Monochromator Setup

Current Wavelength (nm)	Reset Current Wavelength
800	
Move To (nm)	Move
300	

17. Place the sample to be measured on the sample plate located between the monochromator and the integrating sphere and align it with the mounting blocks.

18. In the Stage Setup put a value in the “Move To” area and the translation stage will move the sample plate to that location. Positive values will move the stage towards the computer and negative values will move it away. Adjust the plate location until the sample is in the beam.



Stage Setup

Current Stage Position	Reset Stage Position	
0		
Move To (mm)	Move	Home Stage
0		

19. When the sample location is known find another location where the beam is not obscured by the sample or any other hardware on the sample plate. That location will be the reference. **NOTE THE HOME STAGE BUTTON IS NOT FUNCTIONAL AND SHOULD NOT BE PRESSED AT ANY TIME.**

20. Close the dark box by first pulling the safety catch which will release the safety catches and allow the box to be lowered back down. **MAKE SURE THERE IS NOTHING ON THE YELLOW TAPE AROUND THE DARK BOX.**

21. Place the sample plate in the reference location. And move the filter wheel to position two. Click the “Start Scan” button and select the Reference Scan option. This will begin the reference scan and a progress bar will begin to fill and a graph will plot the measured PMT Current.
22. Move the sample plate to the sample location and click the “Start Scan” button, selecting the Sample Scan. This will begin the sample scan and a progress bar will fill while also plotting the measured PMT Current.

23. Click the “Save Data” button located below the two graphs and another window will open with the option to save and name the data file. Select the Monochrometer Data file located on the desktop and choose the desired file to save, or create a new file.

24. Switch the filter wheel back to position 1. Open the dark box exchange the sample. Repeat steps 20 through 23 as necessary.

POWER OFF:

25. Turn off the controller for the horizontal translation stage motor.
26. Turn off the DAQ system.
27. Turn off PMT high voltage. Turn off the PMT power supply.
28. Turn off the control for the filter wheel. **ENSURE THAT THE FILTER WHEEL IS IN POSITION 1 (CLOSED) BEFORE TURNING OFF.**
29. Press the off button the lamp power supply. Once the lamp is off turn off the power supply.
30. Remove any sample material from the sample plate and close the dark box.