

Starting the experiment for a new run.

1. Temperature monitoring
 - a. Check temperatures in dewar.
 - b. If automatic temperature logger on laptop is not running, then start the program.
2. Gas handling
 - a. Evacuate the helium line from the wall for ~10 minutes (make sure wall valve is closed) in case air leaked into the lines. Keeping the valve to the dewar closed, open the flow controller and allow gas to flow backwards through the controller.
 - b. Close valve leading to pump and refill line from wall and turn off flow controller. Now leave wall line to wall open for the days run.
 - c. Open the valve leading to dewar.
3. Laser locking
 - a. Turn on two switches for the stabilized He-Ne, which is located next to NH dye laser.
 - b. Turn on photo diode of cavity.
 - c. Check the laser wavelength. The transition we want is 14393.36 cm^{-1} .
 - d. Run the digital lock.22 program so that you can see the peaks of he-ne and laser.
 - e. Adjust the cavity scanning voltage so that he-ne is located to the left of laser.
 - f. There should be some room (voltages) for you to move the laser peak around.
 - g. After you are satisfied with the locations of peaks, you can stop and restart the lock program to let the program know the latest peak positions.
 - h. You can click the "lock?" when you want to lock the cavity and laser.
 - i. You can use the lock position program, which should be open on the computer, to change the lock postin of laser.
 - i. (0.4V-> 75MHz for 633nm)
 - ii. (0.4*1.1 V-> 75 MHz for 695 nm)
4. Absorption spectroscopy
 - a. Check probe and YAG laser alignment through dewar. Cell positions will shift as things cool down. If the pulse tube turned off during the night, things may have shifted as well.
 - b. Turn on photodiodes.
 - c. Attach photodiodes to scope channels and check signal strength.
 - d. Attach the yag trigger to external trigger.
 - e. Set up the scope to run in normal mode and trigger on external trigger. If the laser location and frequency are in the right place, then one should be good to go.
5. Fluorescence
 - a. Check that cables are connected to camera.

- b. Start MaxIm DL 5 on the camera computer.
- c. Initialize and connect camera.
- d. Look at camera images in real time to check the camera focus.
- e. Setup the camera program for the specific type of fluorescence imaging (either realtime or using matlab scripts on saved files).