

How to change a sample with the Orange Cryostat:

The temperature should be above 100K before changing the sample.

1. Remove old sample.
 - a. On the Sample Environment computer, disable the emailer on the Lakeshore_336 application by clicking the “Mail Enabled” button (Figure 1). The status window at top will flash red after a few seconds.
 - b. Close the shutter to allow access to the sample pit. (See *Shutter Operation* quick start guide.)
 - c. Unplug the cable connector on top of the stick by rotating the collar counter-clockwise (Figure 2).
 - d. If the vacuum pump is not running, start it and open the valve on top of the pump.
 - e. Turn the blue V5 valve (Figure 2) to point up to the vacuum line and loosen the stick clamp.
 - f. Turn the blue V5 valve to point down to fill with He, remove the stick clamp and wait for the sample space to reach atmospheric pressure.
 - g. Leaving the He flowing, remove the stick and hang on the rack in the sample pit. Make sure that the O-ring stays in place on the port hole.
 - h. Cover stick port hole with a blank, press down and turn the blue V5 valve up to vacuum.

Stick may be very cold. Wear insulating gloves if necessary.

- i. Test the sample with the RadEyeG monitor. If it alarms, or if the sample is leaking, stop and immediately call the RCT (865-274-8658).
- j. Remove the sample from stick and place in the appropriate bin for irradiated samples in the Radiation Materials Area (RMA).

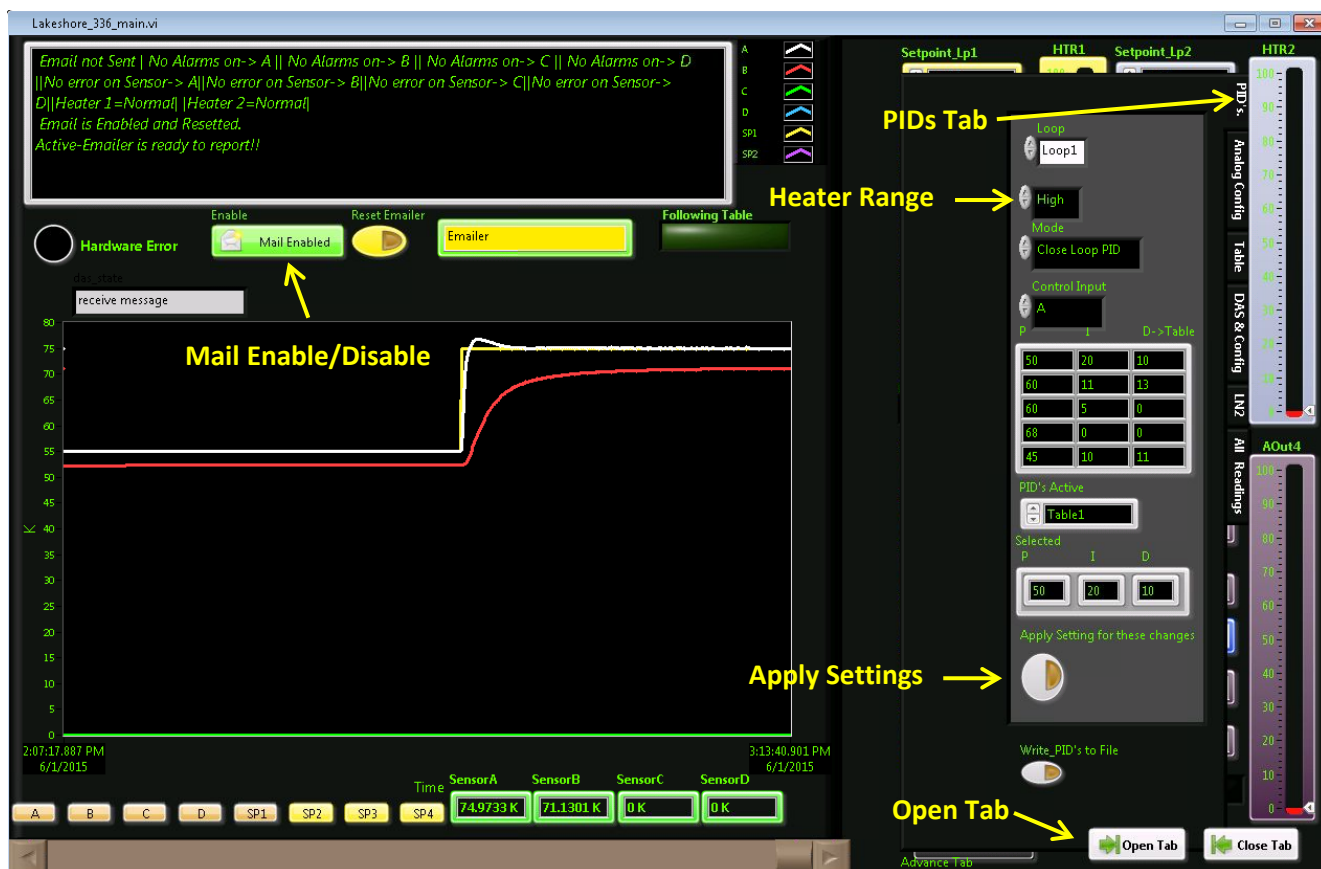


Figure 1. Lakeshore_336 control application on the Sample Environment computer.

2. Load new sample.

The nozzle of the heat gun will be hot.

- Completely dry all condensation off the stick using a heat gun and wipes. Do not leave the heat gun focused on one spot for a long time, to avoid damaging the wires.
- Place the new sample on the stick.
- Turn blue V5 valve down to He and wait for the sample space to reach atmospheric pressure.
- Leaving He flowing, remove the blank and carefully insert the stick, aligning the marks so that the pressure gauge does not block the liquid He fill port.
- Holding down the stick flange, turn blue V5 valve up to vacuum.
- Replace the stick flange clamp.
- Once the sample space reaches vacuum (~ 0 mbar), turn the blue V5 valve down to He.
- Once the sample space reaches ~ 900 mbar, turn the blue V5 valve up to vacuum.
- Repeat steps g and h above, twice, for a total of three pump-purge cycles.
- Briefly turn the blue V5 valve down to He to add ~ 20 mbar of gas.
- Turn the blue V5 valve to the middle closed position to isolate the sample space.
- Plug the cable connector back into the top of stick by aligning the tabs and rotating the collar.
- Sweep the sample pit and open the shutter. (See *Shutter Operation* quick start guide.)
- On the front panel of the Lakeshore 336 controller (Figure 3) located in the RMA, hit the escape button to clear the alarm.
- On the Lakeshore_336 program, open the PIDs tab and select the appropriate heater range (Medium below ~ 100 K and High when heating to room temperature).
- Hit the "Apply Settings" button. The heater will turn on as indicated by a red light on the front panel of the Lakeshore 336 controller (Figure 3).
- Finally, reenable the emailer by hitting the "Mail Disabled" button.

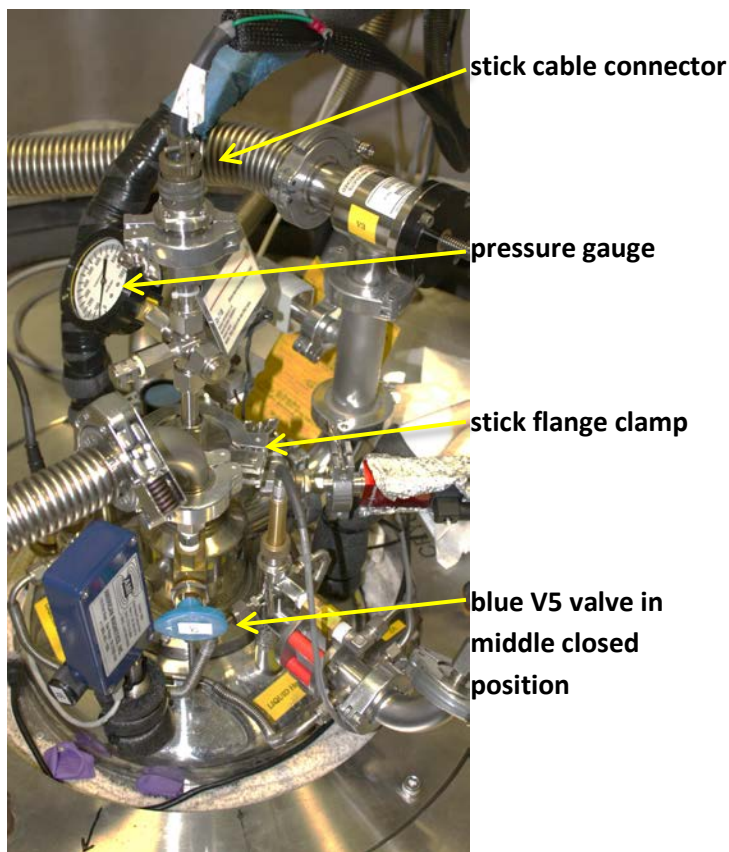


Figure 2. Orange Cryostat connections and valves



Figure 3. Lakeshore 336 temperature controller, showing the Escape button.