How to change a sample with the Orange Cryostat:

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

1. Remove old sample.

   a. Disable the alarm by clicking the "Alarm Enabled" button in the Cryostat box on the dashboard (Fig 1).
   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 from stick and place with its barcode tag in the appropriate beamline location, on the wooden bench in the RMA.

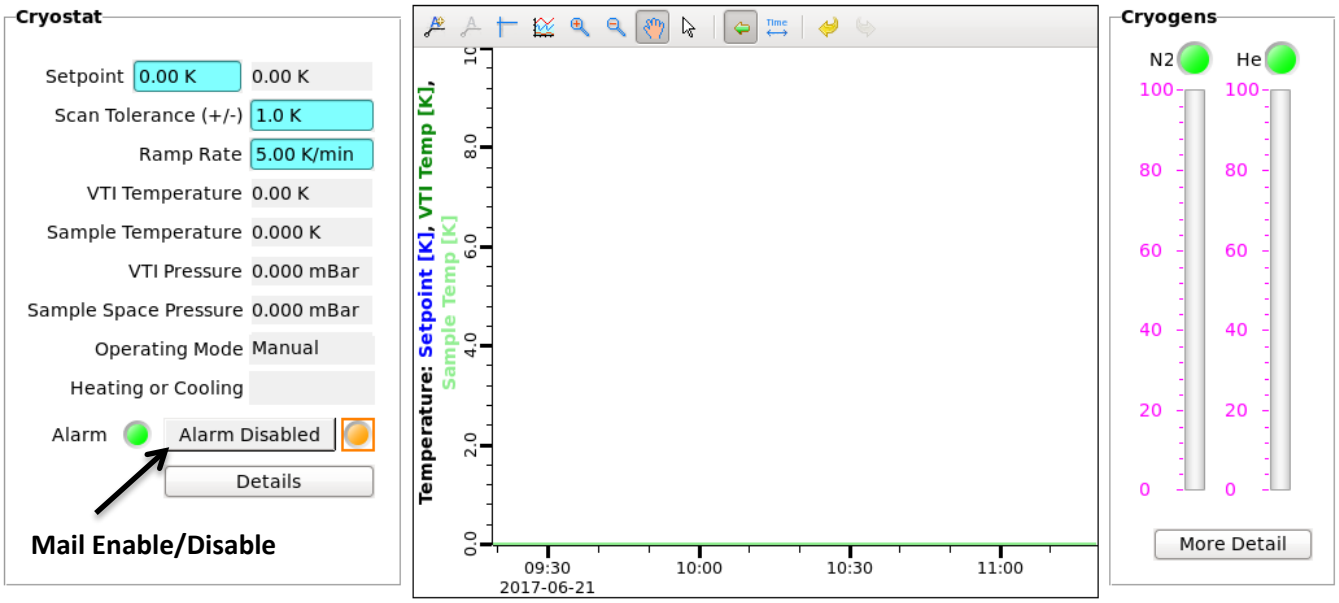

Figure 1. Cryostat controls on the dashboard.

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2. Load new sample.

The nozzle of the heat gun will be hot.

a. 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.
b. Place the new sample on the stick.
c. Turn blue V5 valve down to He and wait for the sample space to reach atmospheric pressure.
d. 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.
e. Replace the stick flange clamp.
f. Turn blue V5 valve up to vacuum.
g. Once the sample space reaches vacuum (~0mbar), turn the blue V5 valve down to He.
h. Once the sample space reaches ~900 mbar, turn the blue V5 valve up to vacuum.
i. Repeat steps g and h above, twice, for a total of three pump-purge cycles.
j. Briefly turn the blue V5 valve down to He to add ~20mbar of gas.
k. Turn the blue V5 valve to the middle closed position to isolate the sample space.
l. Plug the cable connector back into the top of stick by aligning the tabs and rotating the collar.
m. Sweep the sample pit and open the shutter. (See *Shutter Operation* quick start guide.)
n. On the front panel of the Lakeshore 336 controller (Figure 3) located in the RMA, hit the escape button to clear the alarm.
o. Turn the VTI heater on by pressing “A”, “Heater Range”, up arrow to select *High*, then “Enter”.
p. 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).

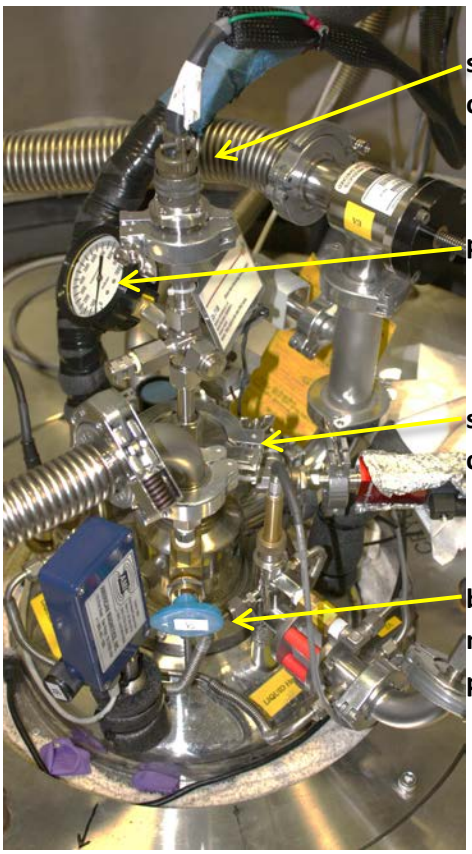

Figure 2. Orange Cryostat connections and valves

q. Finally, re-enable the alarm by clicking the “Alarm Disabled” button in the Cryostat box on the dashboard (Fig 1).

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