




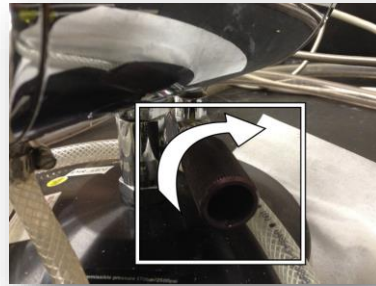
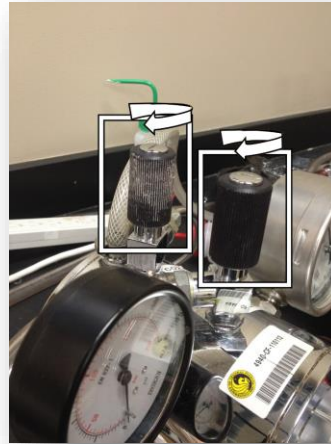
Critical Point Dryer SOP

The critical point dryer is used to dry a sample while eliminating problems of surface tension. It works by a liquid substitution of acetone with liquid CO₂, followed by bringing the CO₂ to its critical point wherein there is no distinction between liquid and gaseous phase. The gaseous CO₂ can then be safely removed. For more on this process or full device manual, check out: http://2spi.com/catalog/instruments/cpd_manual.html

Running the CPD

<p>1. Make sure the CO₂ bottle is open.</p>	
<p>2. Turn on the water heater. Note: Make sure water is in the heater before turning it on. You can be sure of this if the valve is open.</p>	 

3. Make sure all valves on the CPD are closed. There is an inlet valve (connected to the CO₂ source, located on top of the CPD), a vent valve (for venting gasses, on top of the CPD) and a drain valve (for removing substitution liquid, on bottom of the CPD).



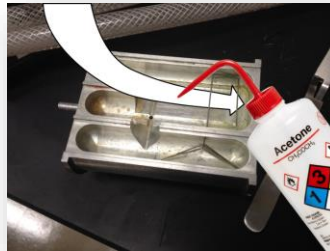
4. If the CPD is at high pressure, open the vent valve to bring the pressure to atmosphere.



5. Unscrew the rear enclosure.
You may have to use a
screwdriver or Allen wrench.



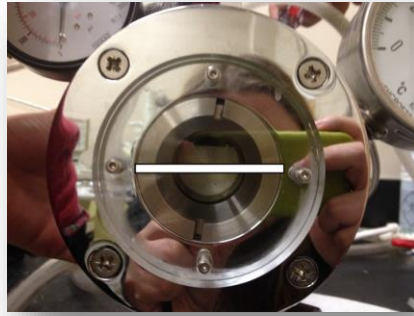
6. Remove the boat from the
chamber. Place your samples in
the boat and fill it with acetone.



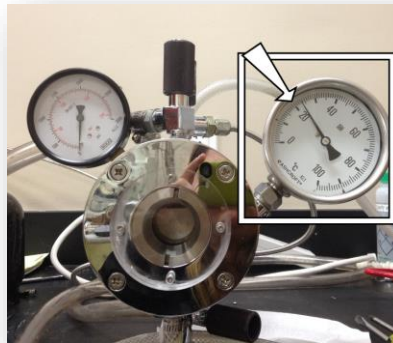
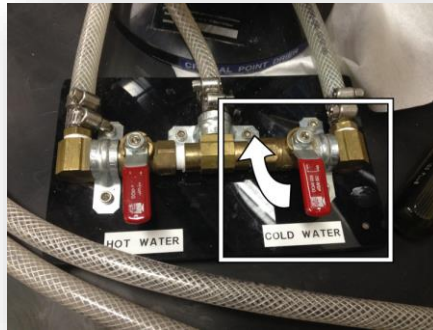
7. Place the boat back into the
chamber and screw on the rear
enclosure. **Make sure that this
is screwed in tight and fully
closed. The enclosure should
be flush with the back of the
instrument.**



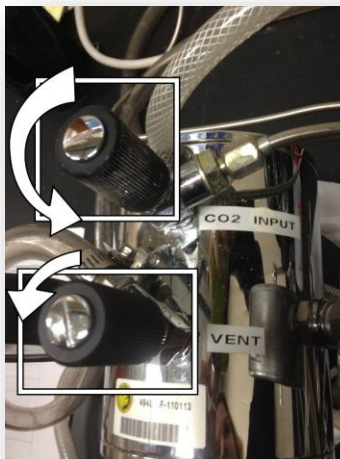
8. You should be able to see the acetone filling up the bottom half of the chamber through the viewing window.



9. Start the flow of cold water to bring the temperature of the CPD to 20°C or less.



10. Open the vent valve slightly to release trapped air in the chamber, then fully open the inlet valve rapidly to fill the chamber with liquid CO₂.



11. Leave the inlet valve fully open, and the vent valve slightly open to maintain the liquid level. Open the drain valve to remove the acetone. This flushing step should be continued for about 5 minutes.

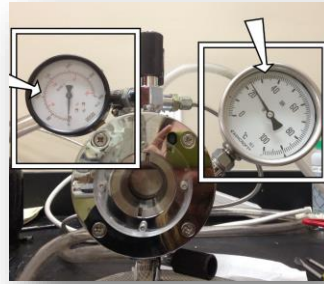


12. Once all of the acetone is removed, fill the chamber with liquid and close all of the valves.

13. Turn the cold water off, and turn the hot water on. Slowly raise the temperature of the chamber. The hot water should only be at a trickle.



14. The CO₂ will reach critical point around 32°C and 1100 PSI. After it reaches critical point turn off the hot water.



15. Gradually open the vent valve to release the chamber pressure. Opening too quickly will cause recondensation of CO₂.



16. Once the chamber is depressurized, you may open the rear enclosure and remove your sample.



17. Close the rear enclosure and turn off the water heater.



18. Make sure all valves are closed, water is turned off, and the gas cylinder is closed.

