

Nanoscale Biomedical Imaging Facility
(CMEM sub-core)
Standard Operating Procedures

Procedure: Critical-point drying

Purpose: To remove the liquid from samples for observation in the scanning electron microscope.

Equipment: Bal-Tec CPD 030 Critical Point Dryer

Method:

1. Place the samples in 100% ethanol in the appropriate holders. Open the chamber and insert the samples. Put enough ethanol in the chamber to keep the samples wet. Close the chamber tightly.
2. Turn on the power. Press **COOLING**. Open the CO2 tank.
3. When the **TEMPERATURE** reaches **10C** press **MEDIUM IN** to open the valve to admit the liquid CO2. Observe the level of the CO2 through the front sight glass. When the liquid has covered the samples press **MEDIUM IN** to close the CO2 valve.
4. Press **MEDIUM OUT** to drain the chamber. Press **MEDIUM OUT** again to stop the draining before the chamber is completely empty of liquid. Refill the chamber by pressing **MEDIUM IN**. After a couple of cycles, wait 10 minutes to allow the CO2 to penetrate your sample.
5. Repeat the **MEDIUM IN, MEDIUM OUT** cycle until all the ethanol has been removed. Check the drain valve on the back of the unit for dripping ethanol after each cycle.
6. When the ethanol has been removed fill the chamber to a few millimetres below the top of the front sight glass. Press **COOLING** to turn off the cooling. Press **HEATING**.
7. Wait for the **TEMPERATURE** to reach **32 C** and the **PRESSURE** to reach **75 bar**. Ensure that the **METERING VALVE** is closed (fully clockwise – **DO NOT OVER TIGHTEN**). Press **GAS OUT**. Slowly open the **METERING VALVE** until you can just hear the gas escaping. Allow the CO2 gas to slowly escape.
8. When the **PRESSURE** reaches zero press **HEATING** to turn off the heating. Open the chamber and remove the samples.
9. Replace the chamber cover. Press **GAS OUT**. Close the **METERING VALVE (DO NOT OVER TIGHTEN)**. Turn off the power. Close the CO2 tank..
10. **Sign the log book.**