

Restart of MProbe For GLA's only

Mprobe Restart After Vacuum Loss

- 1) Turn off all electronics, (2505 Memory Interface, Spectrometer Power Supply, Glassman High voltage, Service Physics X-Ray Gun Controller, nti sputter gun controller)
- 2) Turn off alarm on interlock box near bottom of rack and set all three bypass switches on box **up**.
- 3) Push **reset** button on interlock box
- 4) Press **reset** on back of control box over XPS
- 5) If the Neslab circulator is off **Restart** it.
- 6) Check that the transfer arm is full withdrawn.
- 7) **If the Cryo's are up to a temperature >80 K or the pressure is higher then 1×10^{-7} Torr.**
 - a) Turn **off** cryo-pump compressor
 - b) If the Turbo pump is on turn it **off** and wait till it stops.
 - c) Turn **on** interlock override on control box.
 - d) Check gate valves to see that 0, 1, 2, 5, and 6 are **open** and 3 and 4 are **closed**
 - e) Turn **on** the turbo pump and wait till it is up to speed.
 - f) Wait till the vacuum is $< 1 \times 10^{-6}$ T, this will take 1 to 2 hours or more.
- 8) If the cryo compressor is off turn it **on** (you may need to turn the cryo switch off and then on).
- 9) Make sure that the cryo pump is working
- 10) After the cryo temperature is down below 25K (about 1 to 3 hours) **close** gate valves 1 and 5 (only 0, 2 and 5 are open).
- 11) On the interlock box set the alarm and three bypass switches to **down** (on)
- 12) Turn **off** interlock override.
- 13) Continue to next section.

Restarting M-Probe X-Ray Gun

1. Check that the vacuum system is OK
2. Gates 0, 2, and 6 should be open with all others closed
3. Turn **off** interlock override on back of control box over XPS.
4. Make **sure the system power switch on the** back is up
5. Turn **on** X-ray gun boxes (
 - a. Turn on Glassman high voltage and press HV on,
 - b. Turn on 9603 X-ray gun spot size controller
 - c. Make sure the Interlock OK LED comes on otherwise you cannot get current from gun.
6. If the vacuum has gotten above 1×10^{-7} Torr or system was vented:

- a. Turn "ramp" knob on spot size controller to **slowest**, fully clock wise (service switch down)
 - b. Press "**start filament**" on 9600 followed by "**HV on**" on Glassman and wait for it to read 2kV on the spot size controller box - watch pressure (Filament on LED should turn on, Xfer OK LED on, Panel meter should read I FIL mode and go to ~1.2 A)
 - c. Set the "service" switch **UP**, keeping "ramp" knob on **slowest** setting (c.w.) and changing "stand by" to "**operate**" (takes 8 h, watch pressure)
7. If the vacuum did not get above 1×10^{-7} Torr:
 - a. Turn "ramp" knob on spot size controller to **fastest**, counter clock wise (service switch down)
 - b. Press "**start filament**" followed by "**HV on**" and wait **for it** to read 2 KV on the spot size controller box - watch the pressure
 - c. Set the "service" switch **up** and turn "ramp" knob to **fastest**, then press "**operate**" (takes 2 h, watch pressure)
8. Once 10kV reached, degas anode by starting X-ray gun on 100 micron spot and slowly **increasing the spot size until largest spot does not raise pressure above 2×10^{-8} Torr**
9. Turn off X-rays
10. Turn on spectrometer boxes (top 3, spectrometer power supply, flood gun, memory interface)
11. Open software, check "**X-ray gun operate**" in ESCA control panel
12. Switch spot size controller from "manual" to "**computer**"
13. Degas flood gun - check "**Flood Gun**" box in ESCA control panel and increase energy to 5 eV, watch pressure and wait for at least 1 hour
14. Turn down flood gun energy, **uncheck flood gun** box, and close ESCA control panel
15. Instrument is ready to use

XPS maintenance schedule Kratos and MProbe

- **Every week:**

- Refill water on Affinity and Neslab circulators
- Check water level on Hawk chiller
- Check N2 level on HREELS and order new cylinders
- Replenish gloves, IPA, and KimWipe

- **Every 6 months:**

- Change M-Probe pump oil (last 08/2019)
- Change M-Probe anode (3 3/8" Cu gasket, Al/Cu anode, 6 Au 1/8" screws PRT-6520-003) (last 08/2019)
- Change M-Probe Hawk circulator deionizer (Thermo Sci combined

DEM/OXY cartridge D8809) and water filter (Hytrex cartridge filter PRT-6530-003) (last 08/2019)

- Change the water and air filters for the MProbe located in the overhead rack.(changed 08/2019)
- Change Kratos Affinity circulator filter (Pentek filtration polydepth filter cartridge PD-1-934) (last 2013-09-25)

- **Every 36 months (last 2013-02-17):**

- Check and change Kratos deionizer cartridge (84-789), or when deionizer stays on
- Change house water filter

- **Every 60 months:**

- Change tip seals on Kratos (last 2013-04-19) and EELS (last 2010-07-01) scroll pumps
- Change house air filter (Motor guard M-723 filter element) (last 2010-07-01)

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