

Low temperature measurements down to 80 K can be carried out using the MMR cryostat. The cryostat uses high purity, high pressure nitrogen (1800 psi). Be sure to run the nitrogen gas through the filter to remove any water, otherwise the tubing will become blocked with ice.

The cryostat is mounted on an optical, which can be clamped to the magnet. Make sure the cryostat is tightly secured, otherwise the vacuum hose will pull it around.

1. Mount the sample in the cryostat using Apiezon N grease. Sometimes the sample will slip off, so it's a good idea to tie it down using teflon tape.
2. Once the sample is mounted in the cryostat, place the cryostat in the magnet and clamp it down. The cryostat connects to the electronics via a cable that slides into the standard mounting post, just as with a normal sample.
3. Pump out the cryostat for about 30 minutes. There is a cross and vacuum gauge in the drawer with the cryostat, which can be used to monitor the pressure.
4. Check that the cryostat outlet port is properly connected to the flow meter. Any blockage will cause the pressure increase in the cryostat, potentially breaking it.
5. Open the nitrogen tank and set the regulator to about 500 psi. This is not enough to cool the system, but will flush out the lines. Let the Nitrogen flow for a few minutes.
6. Set the temperature controller to 80 K and turn the pressure to 1800 psi. Cooldown will take about 30 minutes.
7. Change the temperature to desired setting. Wait at least 10 to 15 minutes for the sample to reach the set temperature.
8. When finished, set the temperature to 20 C and wait for the cryostat to warm up.
9. Turn the nitrogen pressure down as low as possible and vent the cryostat.
IMPORTANT: Never turn off the roughing pump while the cryostat is still under vacuum. This will cause oil to stream into the cryostat.