

The NJIT Physical Properties Measurement System Laboratory

The NJIT PPMS Laboratory is a 20ft x 22ft space with a dedicated chilled water system and upgraded electrical power prepared for the properties measurements system by NJIT. Details and photographs of the space and equipment are given in what follows.



Fig. 1.1. PPMS laboratory analysis computer with temperature and humidity logging sensor. Above the monitor is a network camera (sound, pan by 350°, tilt by 120° and 22x zoom) which enables one to remotely monitor conditions in the room. In concert with the ability to remotely login to the control computer, the camera enables one to conduct experiment at a location remote from the laboratory.



Fig. 1.2. The PPMS laboratory has a 18ft long counter for sample preparation and instruments including microscopes and high precision balances to work with small samples. Two chemical fume hoods are also available in the laboratory.



Fig. 1.3. View of the helium recovery closed cycle system (chrome cylinder) attached to the aluminum rack, the large capacity dewar (black cylinder) for the PPMS system and control cabinet and control system. In the far corner, you can see the reservoir for the split chilled water system (heat exhaust part on roof).



Fig. 1.4. Close-up view of the helium vapor extraction probe inserted into the PPMS liquid helium reservoir. Vapor is condensed in an internal cold head (in chrome cylinder) and reinjected into the helium reservoir in standard operation mode. In fill-mode, room temperature helium gas from a standard tank (background) can be converted into liquid helium to top-off the reservoir as a result of loss of liquid helium from rapid boil-off when the magnet is continually ramped.



Fig. 1.5. PPMS control system cabinet and computer. To the left on the floor is one of the two UPS systems for the control system. The chilled water reservoir and recirculation system is located in the far right corner.



Fig. 1.6. Compressor for the helium recovery and liquification system with black chilled water lines going back to the water chiller system.



Fig. 1.7. Heat exhaust component of the dedicated chiller for the PPMS system. It is located on the roof directly above the PPMS laboratory.

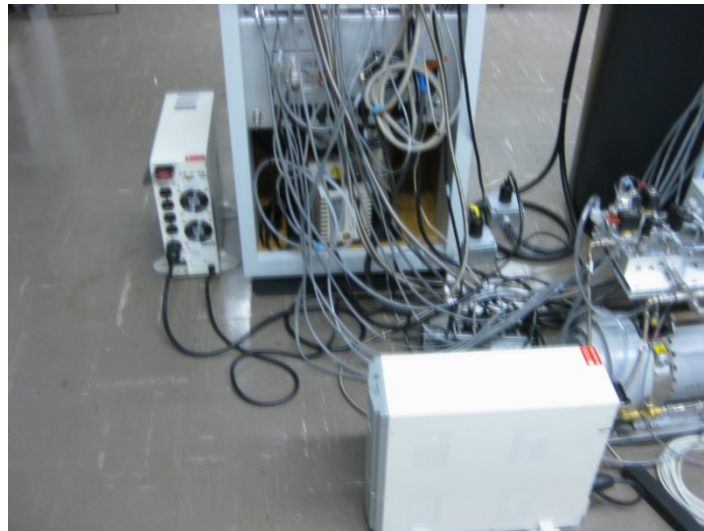


Fig. 1.8. Two UPS systems used to protect the control system and the magnet power supply are in the foreground and on the left of the control cabinet, respectively. On the right is a scroll pump for the PPMS sample chamber.