

SUPERCONDUCTING MAGNETIC SYSTEMS **SPECIFICATIONS**

The contractor must provide as specified below a two-axis superconducting magnet that is mounted in a low loss helium research Dewar that is liquid nitrogen shielded. The magnet system must include a bi-polar dual power supply and controller. The Dewar must be liquid nitrogen shielded and include a variable temperature control, helium and nitrogen level indicators, and a helium transfer tube.

- 2 Axes superconducting magnet system
 - 9T Field in vertical direction (0.1% homogeneity in a 1cm spherical volume)
 - 4T Field in horizontal direction (0.5% homogeneity in a 1cm spherical volume)
 - Both with persistent switch heaters
 - 3T maximum combined field at arbitrary angle
- Mounted in a Low Loss Liquid Helium Research Dewar
 - Maximum total height 65"
 - Liquid nitrogen shielded – minimum nitrogen hold time of 2 days
 - Static liquid helium consumption rate of 0.3 liters/hour or better
 - Static liquid helium hold time of 8 days or better (above magnet coil level)
 - Heater/de-icer for needle valve
- Bi-polar dual power supply
 - Field resolution: 1 Gauss or better
 - Field drift: <2 Gauss
 - IEEE-488 control
 - Labview drivers/ software interface
- Variable Temperature Insert
 - 2.1" inner diameter or larger
 - temperature sensor and heater to control helium vapor temperature
 - 4.2 K to 300 K or higher temperatures must be achieved with no pumping on the insert and down to 1.5K with pumping.
 - Top assembly for sample insert. Two duplicate assemblies are required each consisting of four electrical feedthroughs on the sides and optical access window on top flange through which a laser beam can enter along vertical axis. Window and electrical feedthroughs must be screw mounted with o-rings for easy replacement. The sample mounting sticks will be built by NRL to hang from these top assemblies.
- Liquid helium level sensor and monitor
- Liquid helium transfer Line with 60" flexible segment and two fixed segments. One of the fixed segments must be 60" to fit to the bottom of a 100 liter helium transfer dewar.

- Liquid nitrogen level sensor and monitor