

## **Specifications for a Split-Pair Pulsed Tube Crygen Free Room Temperature Bore Superconducting Magnet**

The Naval Research Laboratory (NRL) has a requirement for a Split-Pair Pulsed Tube Crygen Free Room Temperature Bore Superconducting Magnet.

This system will be utilized in conjunction with a Fourier Transform Infrared Spectrometer and an Oxford MicrostatHe rectangular tail.

The magnet system must consist of the following components and shall meet or exceed the following specifications.

### **Split-Pair Pulsed Tube Crygen Free Room Temperature Bore Superconducting Magnet**

- S1. The maximum magnetic central field shall be 6.0 Tesla or higher.
- S2. The magnetic central field homogeneity shall be +/-0.5% over a 10mm (DSV) or better.
- S3. The magnetic field shall be in the horizontal configuration.
- S4. There shall be optical access in both the horizontal directions parallel and perpendicular to the field (Faraday and Voigt).
- S5. Room temperature bores in both horizontal directions.
- S6. The bore diameter in all directions shall be 1.87" (ID) or bigger.
- S7. All room temperature bores shall be terminated with NW50 flanges to allow the room temperature bore to be evacuated and/or purged.
- S8. There shall not be any windows in the room temperature bore.
- S9. The distance from one end to the other end of the room temperature bore (including NW50 flanges) shall be 15.6" or smaller for all horizontal bores.
- S10. The system shall be fully protected against damage due to quench.
- S11. The superconducting magnet shall be cooled with a pulse tube cryocooler to reduce vibrations. In order to further reduce vibrations, the cryocooler shall be a remote control one in which the only moving part of the cryorefrigerator is located 1 meter or further away from the system.
- S12. The magnet shall be computer controlled.

S13. Labview drivers shall be provided.

S14. Cooling time from room temperature shall be less than 48 hours.

S15. It shall be possible to ramp the field from 0.0t to 6.0t in less than an hour.

**OPTION 1**

Additional vertical room temperature bore perpendicular to the magnetic field (NW50 terminated).

**Installation and Training**

- a. The price of the magnet shall include installation at NRL, Washington DC. Installation shall include a demonstration that the instrument is in compliance with the specifications.
- b. The price of the spectrometer shall include delivery of the instrument to NRL, Washington DC.
- c. At the completion of the installation and demonstration, the successful offeror shall provide one-time, on-location training at NRL.

**Documentation and warranty**

- a. A full set of all written documentation customarily provided to the public with a commercial item shall be provided. This shall include users manual(s) or equivalent as well as copies of any software, and any manuals for the software included with the system, if customarily provided. This documentation shall be received by NRL with the system hardware, unless other arrangements are agreed to by the authorized Government representative.
- b. The contractor shall offer the Government at least the same warranty terms, including offers of extended warranties, offered to the general public in customary commercial practice. These warranty terms must be included in the system price. The period of the warranty shall begin upon acceptance.