



**CRYOMAGNETICS, INC.**  
INNOVATIVE TOOLS FOR SCIENTIFIC RESEARCH

## Liquid Cryogen-FREE Research Systems for Microscopy Applications

Cryomagnetics' compact cryogen-FREE research systems provide the researcher with access to magnetic fields to 9 Tesla while providing a thermal and vibrationally stable, variable temperature platform, in which to perform optical microscopy.

### **No Liquid Cryogens for the Superconducting Magnet**

Cooled by a low-vibration, low-maintenance 4.2K pulse-tube cryorefrigerator. This results in a compact system without the interruption of liquid cryogen refills.

### **Flexible Superconducting Magnet Configurations**

9 Tesla standard configuration. Options for 5 or 7 Tesla.

### **Variable Temperature Microscope Cryostat**

Ultra high stability continuous flow cryostat for high spatial resolution microscopy with isolated delivery and vent lines, offering a typical drift of 50 nm over a five minute period.

The temperature of the sample mount can be varied from approximately 4.5K up to 300K (400K optional)

16mm diameter sample mount (Nominal) with heater and temperature sensor are provided for controlling the temperature of the sample.

16mm clear view provided through a top mounted 16mm x 1.6mm fused quartz window. A second window 25mm x 1.6mm fused quartz window is located on the bottom of the cryostat for transmission experiments (with appropriately designed sample mount).

The cryostat can be operated in a standard configuration outside the superconducting magnet system's bore if desired.

### **Ease of Use**

Includes a high precision X-Y translation stage coupled to a Z-motion stage for supporting the cryostat within the bore of the magnet and translating it in a horizontal plane for full sample observation.

### **High Efficiency Transfer Line**

Liquid helium (or nitrogen) can be transferred into the microscope cryostat with no measurable disturbance of the sample.

### **Turn-Key System**

Includes superconducting magnet, 4.2K cryocooler system, microscope cryostat, superconducting magnet power supply, temperature controller, thermometry, and LabVIEW® drivers.



**Compact Microscopy System**

9 tesla Superconducting Magnet with  
Optical -Variable Temperature  
Microscopy Cryostat

1006 Alvin Weinberg Drive • Oak Ridge, Tennessee 37830 • Telephone (865) 482-9551 • Fax (865) 483-1253

Web: [www.cryomagnetics.com](http://www.cryomagnetics.com) • Email: [sales@cryomagnetics.com](mailto:sales@cryomagnetics.com)

# Superconducting Magnets and Systems

## C-Mag Cryogen-FREE

### Integrated VTI Systems

- Single Cryocooler for both the magnet and sample
- Low Vibration Options
- Large 49mm sample space
- Solenoids up to 14 Tesla
- Split Pairs up to 7 Tesla
- Multi-axis Configurations
- Upgradeable with dilution and He3

inserts

### Superconducting Magnets

- Solenoids, split pairs, multi-axis
- Solenoids up to 21 Tesla
- Split Pairs up to 11 Tesla
- 2 and 3 axis Magnet Configurations
- Cryogen-FREE
- High homogeneity
- Ultra-low current
- Compensated

- Actively Shielded
- Custom Configurations

### Turn-Key Systems

- Accelerator beamline magnets
- Gyrotron
- Nuclear Demagnetization
- Optical access magnets, microscopy
- OEM
- NMR/EPR
- Magnetic separation

## *Magnet System Cooling Options*

### Cryogen FREE:

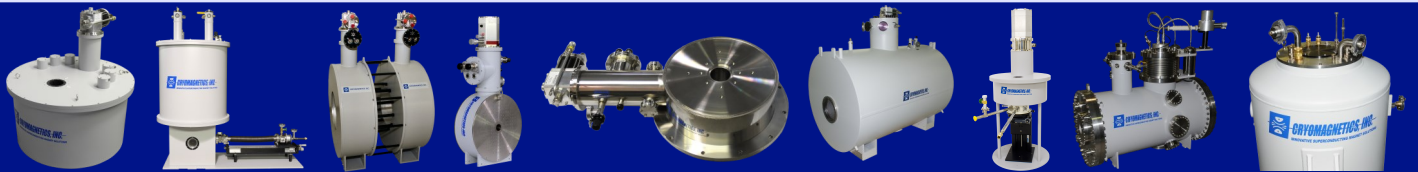
In response to liquid helium becoming increasingly difficult to obtain and afford, most research magnet configurations are now available Cryogen-FREE. Using two stage closed cycle cryocoolers, temperatures of <1.8K are obtainable. Vertical or horizontal bores in either room temperature or with integrated inserts are available. Efficient magnet and cryostat designs allow for the use of smaller cryocoolers. This saves both on initial investment and cost of long term operation. Mechanically decoupled sample stages are available as options for low vibration applications.

### Recondensing systems:

Integration of a closed cycle cryocooler into a traditional liquid helium vessel allows for the recovery of helium traditionally lost through boiloff. The presence of a helium reservoir allows for operation with ultra low vibration as the cryocooler can be turned off during sensitive measurements (Helium will be lost while operating in this manner). Similarly, in the event of power failure the magnet can be discharged safely using the automatic rampdown feature of the Model 4G Power Supply.

### Liquid Helium Cooled:

The lowest initial investment option continues to be liquid helium cooled systems. To help offset the high cost of helium, our efficient magnet designs allow for lower charging currents which result in the lowest boiloff in the industry. Superinsulated or liquid nitrogen shielded dewars are available. Liquid options are still traditionally used for high heat load applications such as rapid



***Contact us today to order your configuration!***

### Additional cryogenic components available:

Model LM-510 Liquid Level Monitor and Sensors

Helium Reliquifier Control System

Model 612/614 Temperature Monitor and Sensors

Model 4G Bipolar Superconducting Magnet Power Supply

Current Leads (Vapor cooled, HTS and Duty Cycle Optimized)

Cryogenic Dewars, Vapor shielded, LN2 and Recondensing

Cryogenic Transfer Lines

HTS Magnets

Custom design and manufacture of magnets and cryostats



1006 Alvin Weinberg Drive • Oak Ridge, Tennessee 37830  
Telephone (865) 482-9551 • Fax (865) 483-1253  
Web: [www.cryomagnetics.com](http://www.cryomagnetics.com) • Email: [sales@cryomagnetics.com](mailto:sales@cryomagnetics.com)