

CRYOGEN-FREE MAGNETS FOR NMR / EPR TO 600 MHZ



600 MHz Wide RT Bore Magnet

NMR superconducting magnets deliver high magnetic field homogeneity over the sample volume and excellent temporal field stability. The NMR experiments are typically conducted at fixed field, in persistent mode. Our cryogen-free systems provide this environment, while eliminating the need for liquid cryogens.

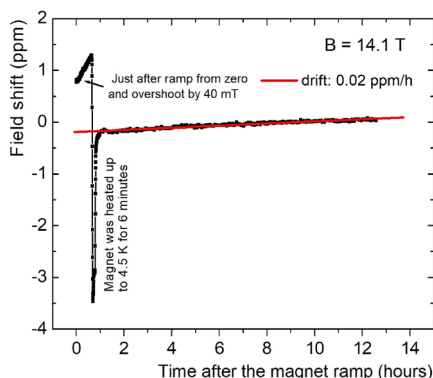
The Cryogenic NMR magnets are very flexible compared to traditional systems. With a cryocooled NMR magnet, there is no consumption of liquid helium, so there is no need to have removable current leads to reduce the heat load to the system. This allows the user to set the field at any level up to the maximum rated field for long term operation. It also allows the magnetic field to be dynamically swept between zero to maximum field as required, making them the most versatile NMR magnets available commercially.

Key features

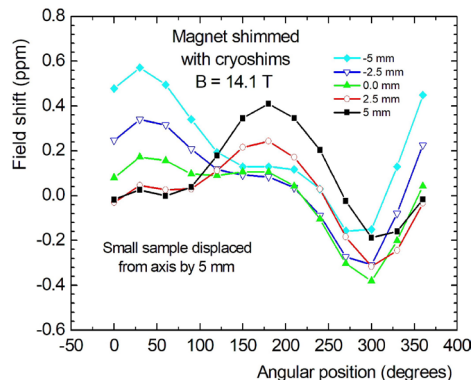
- » Fixed and variable field operation
- » ≤ 1 ppm fixed field central homogeneity
- » Multi-field option without compromises on resolution
- » ~ 50 ppm variable field central homogeneity
- » Rapid $\ll 0.1$ ppm/hr drift in persistent mode
- » Fast field setting (within an hour)
- » Superconducting sweep coils
- » Designed to minimise vibration resulting in low sample displacement

Sample Environment:

- » Temperature range between 2 K to 400 K
- » Top or bottom load probe



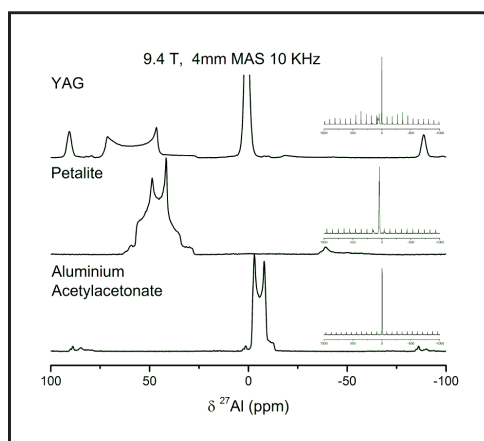
Magnetic field drift



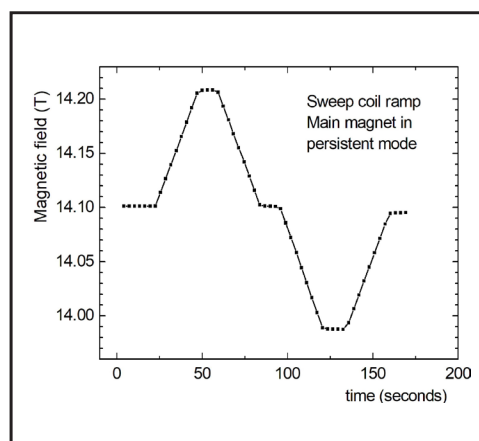
Magnetic Field Profile

Technical Specifications:

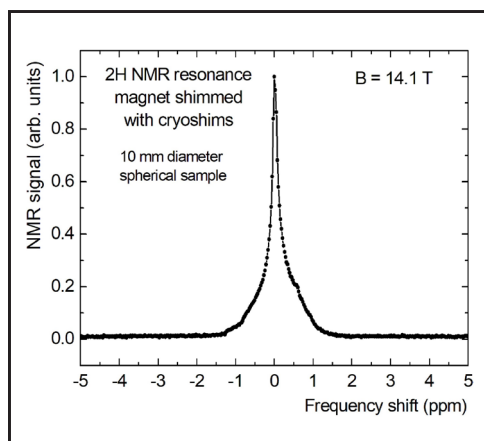
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|--|------------------------------|
| 54 or 89 wide RT bore systems | Model: CFM-600 MHz |
| Maximum central operating field at 4K | 14.1 Tesla |
| Equivalent Maximum Proton frequency | Up to 600 MHz |
| Shimmed central homogeneity | 1 ppm over 10 mm sphere HHLW |
| Cryo-shims | Z1, Z2, X, Y, C2, S2, ZX, ZY |
| Long-term drift rate | ≤ 0.1 ppm/hr |
| Room temperature bore | 54 or 89mm diameter |
| Field Sweep | 0 T to 14.1 T |
| Typical initial cool-down to operating temperature | 70 hrs / 100 hrs |
| Actively Shielded | Yes |
| Field sweep coil | Optional |



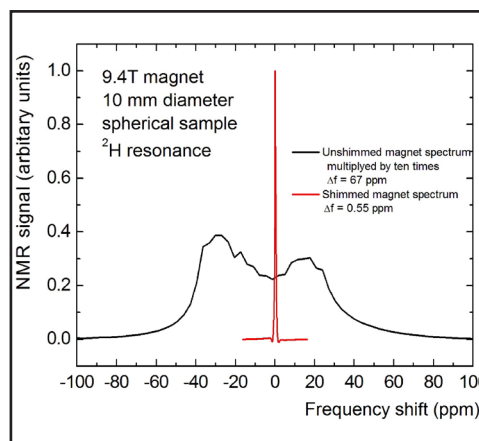
NMR spectra in magnetic field of 400 MHz



Sweep coil operation



NMR spectrum



NMR spectra for shimmed and unshimmed magnet