

CUSTOM HIGH FIELD CRYOGEN-FREE EPR MAGNETS

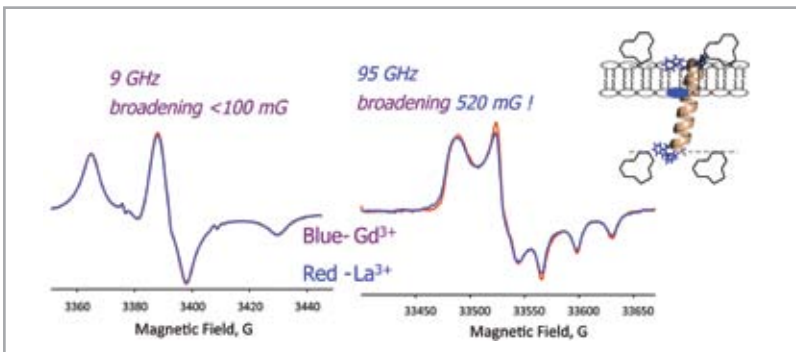
- Cryogen-free magnets generating fields up to 14 T
- Magnetic field along or transverse to vertical bore
- Superconducting sweep coils
- Variable temperature inserts integrated into cryostat
- Optical access to sample region
- Custom magnets tailored to special sample requirements



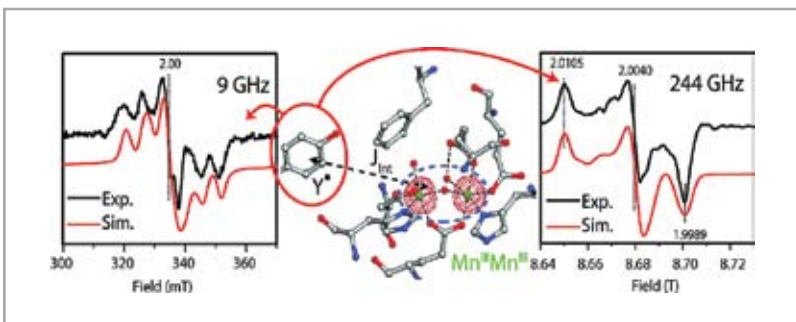
High performance W-band microwave bridge installed above 12 T cryogen-free magnet (courtesy Dr. A. Smirnov, North Carolina State University)



12 T cryogen-free magnet for EPR



Intensity-normalized experimental EPR spectra from 6-WALP in DMPC/DMPE-DTPA bilayer in the presence of Gd^{3+} ions (blue) and in the presence of La^{3+} (red) ions. LEFT at 9 GHz and RIGHT at 95 GHz (courtesy Dr. A. Smirnov, North Carolina State University)



EPR spectra at 9 GHz and 244 GHz of tyrosyl radical in R2F subunit of Ribonucleotide Reductase of *Corynebacterium ammoniagenes* together with a representation of the crystal structure around the $Mn(III)$ - $Mn(III)$ dimer (courtesy of Dr. E. J. Reijerse and Prof. W. Lubitz, Max Planck Institute for Bioinorganic Chemistry, Muelheim; reproduced from *J. Am. Chem. Soc.* (2010) 132, 11197–11213)



Cryogen-free 7T split pair for EPR with integrated variable temperature insert being installed in Kochi, Japan

CUSTOM HIGH FIELD CRYOGEN-FREE EPR MAGNETS

Technical Specifications

| Product | CF 7 T split pair | CF 12 T solenoid |
|-----------------------|---------------------------|---------------------------|
| Field strength | 7 T | 12 T |
| Homogeneity (*) | < 10 ppm | < 10 ppm |
| Shimming | As required | As required |
| Drift | 0.1 ppm/hr | 0.1 ppm/hr |
| Room Temperature bore | 45 mm | 45 mm |
| Field sweep (#) | -7 to +7 T | -12 to +12 T |
| Cryocooler | 1.5 W pulse tube | 1.5 W pulse tube |
| Compressor | Water cooled, three phase | Water cooled, three phase |
| Cooldown time | 36 hours | 48 hours |

(*) Homogeneity measured by plotting field over 1 cm long x 1 cm diameter cylinder

(#) Homogeneity of 10 ppm maintained over entire sweep range. Assumes a high resolution 20 bit magnet power supply (optional extra).

Key Benefits of Cryogen-Free Technology

- No cryogenic experience required
- Turn-key operation
- Overnight cool-down
- Low cost of ownership
- Minimal maintenance
- Minimal quench hazards

Leaving you to focus on the science

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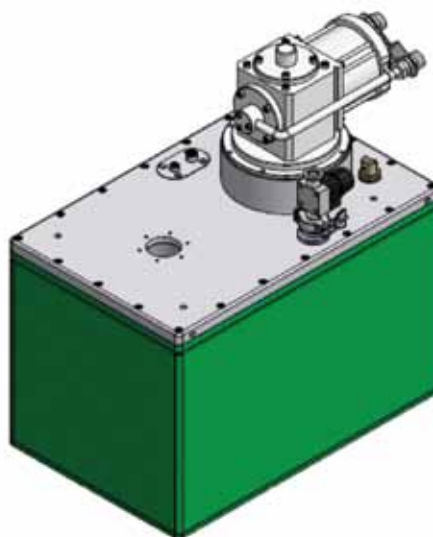
www.cryogenic.co.uk

CRYOGEN-FREE DESK-TOP EPR SYSTEMS

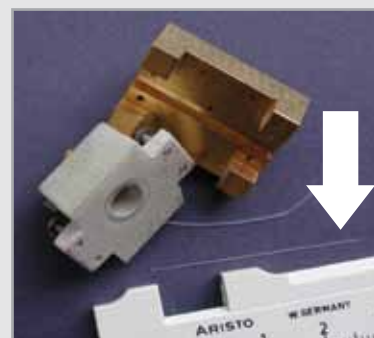
- Compact 3 T and 6 T cryogen-free magnets
- Magnetic field along or transverse to vertical bore
- EPR-grade homogeneity, EPR-grade drift
- Field sweepable while maintaining homogeneity
- Cryo-coolers with air-cooled compressors which run off single phase mains
- LabVIEW based temperature diagnostics



6 Tesla cryogen-free magnet

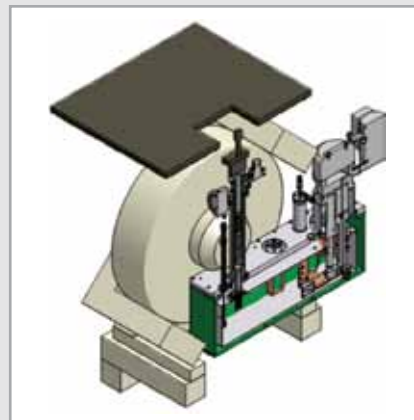
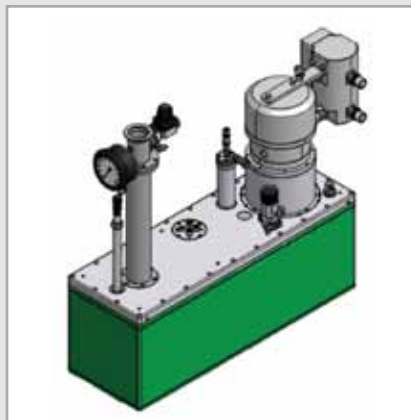


Probe head for W-band EPR (above) and associated resonator (below) with sample tube highlighted by arrow (courtesy Dr. A. Smirnov, North Carolina State University)



CRYOGEN-FREE VARIABLE TEMPERATURE INSERTS

- For retrofitting to conventional low field EPR magnets
- Ergonomic design
- Elimination of liquid helium transfers
- Efficient thermal design
- Temperatures down to 2 K
- Custom sample probes available with RF and optical access



The VTI can be installed between pole pieces of standard EPR magnets and is compatible with standard EPR probes.

CRYOGEN-FREE DESK-TOP EPR SYSTEMS

Technical Specifications

| Product | CF 3T split pair | CF 6T solenoid |
|-----------------------|--------------------------|--------------------------|
| Field strength | 3 T | 6 T |
| Homogeneity (*) | < 10 ppm | < 10 ppm |
| Shimming | As required | As required |
| Drift | 0.1 ppm/hr | 0.1 ppm/hr |
| Room Temperature bore | 45 mm | 45 mm |
| Field sweep (#) | -3 to +3 T | -6 to +6 T |
| Cryocooler | 250 mW pulse tube | 250 mW pulse tube |
| Compressor | Air cooled, single phase | Air cooled, single phase |
| Cooldown time | Overnight | Overnight |

(*) Homogeneity measured by plotting field over 1 cm long x 1 cm diameter cylinder

(#) Homogeneity of 10 ppm maintained over entire sweep range. Assumes a high resolution 20 bit magnet power supply (optional extra).

Key Benefits of Cryogen-Free Technology

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