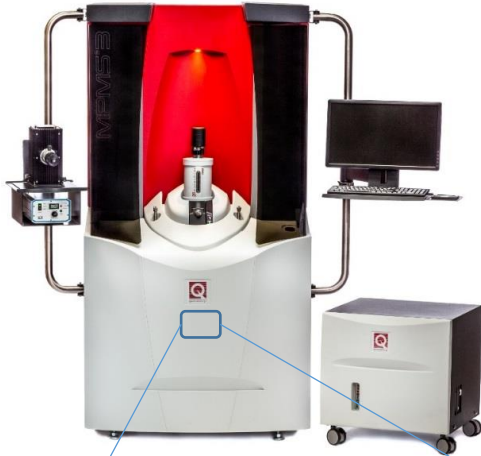
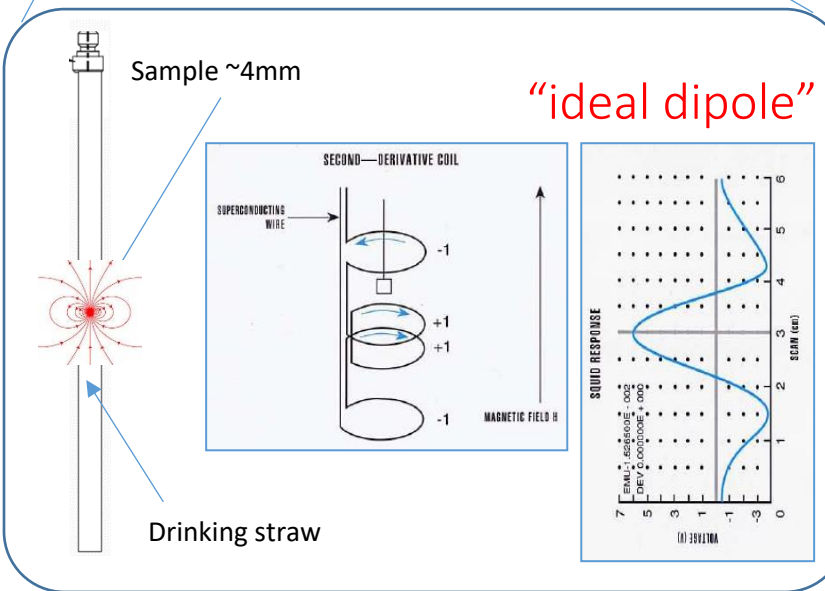


MPMS-3 EverCool SQUID magnetometer at Purdue

Please visit the BNC Wiki page: <https://wiki.itap.purdue.edu/x/loZzB>



- Most sensitive instrument for measuring bulk magnetic dipole moment m
- Inductive measurement using gradiometer coils around a moving sample
- High speed: full magnetic $m(H)$ hysteresis loops in just minutes
- Uses a "SQUID" : superconducting interferometer
- Samples: film, bulk, crystals, powder
- 8mm diameter sample space (4x4mm film typical)
- 10^{-8} emu (10^{-11} A-m²) sensitivity
- Temp. : 1.8 – 400 K, oven : 300 – 1000 K
- Field : +/- 7 tesla (70 kOe)
- AC susceptibility: $f = 0.1 - 1000$ Hz
- electrical transport or biasing **while** measuring m
- EverCool: pulse-tube cryocooler recondenses the helium that evaporates from the dewar



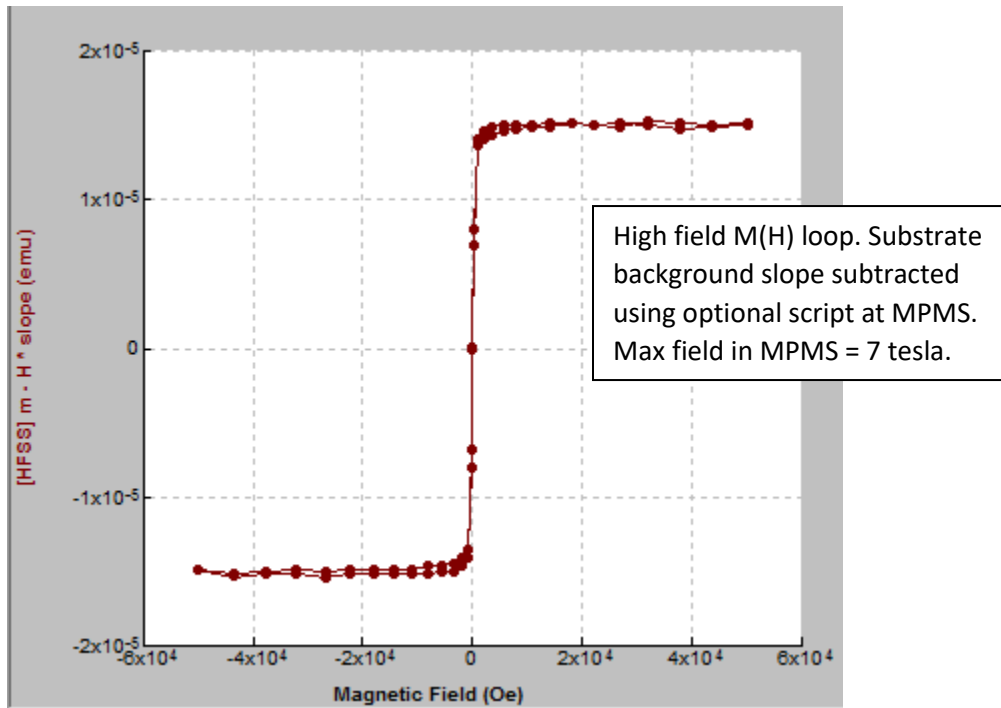
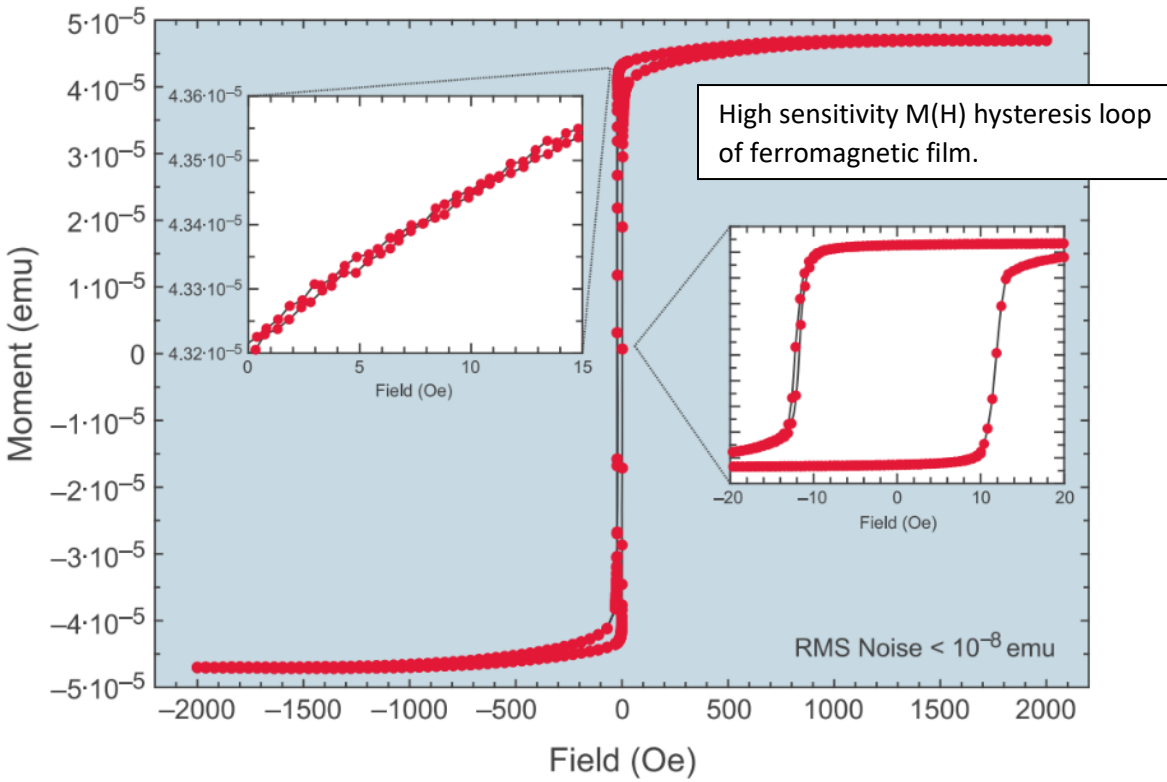
Others can be added:

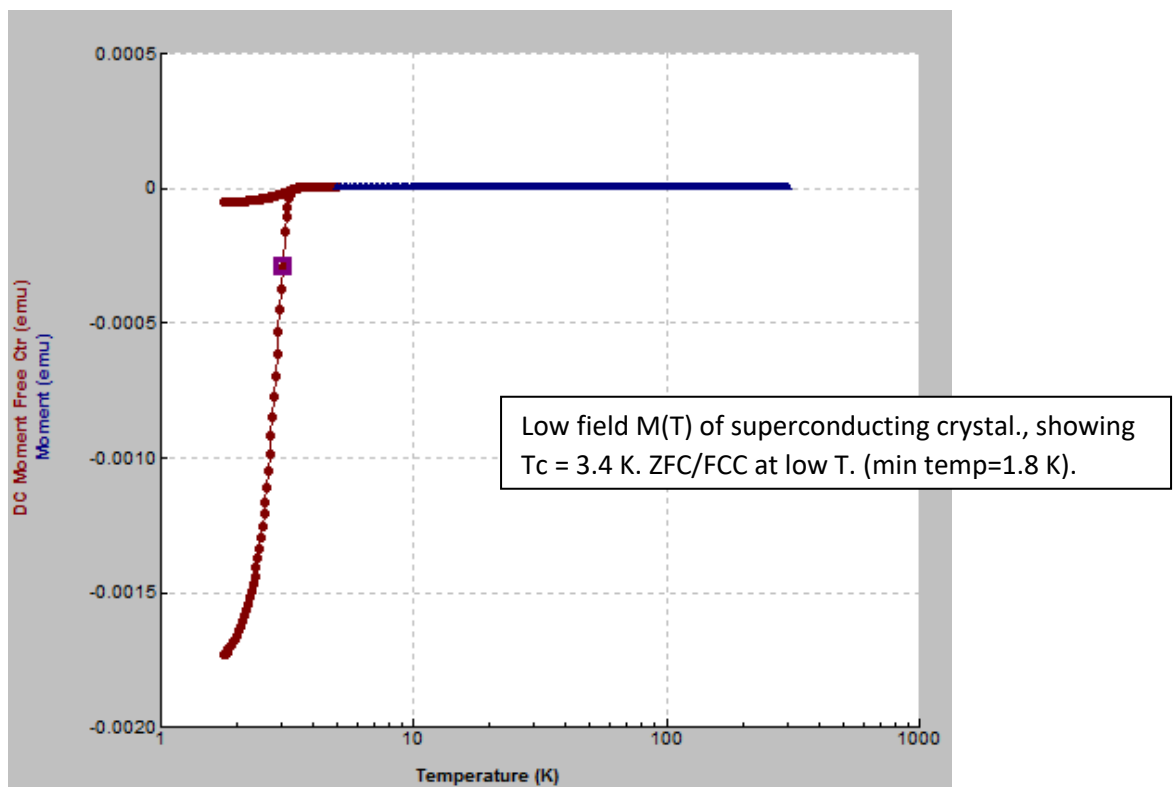
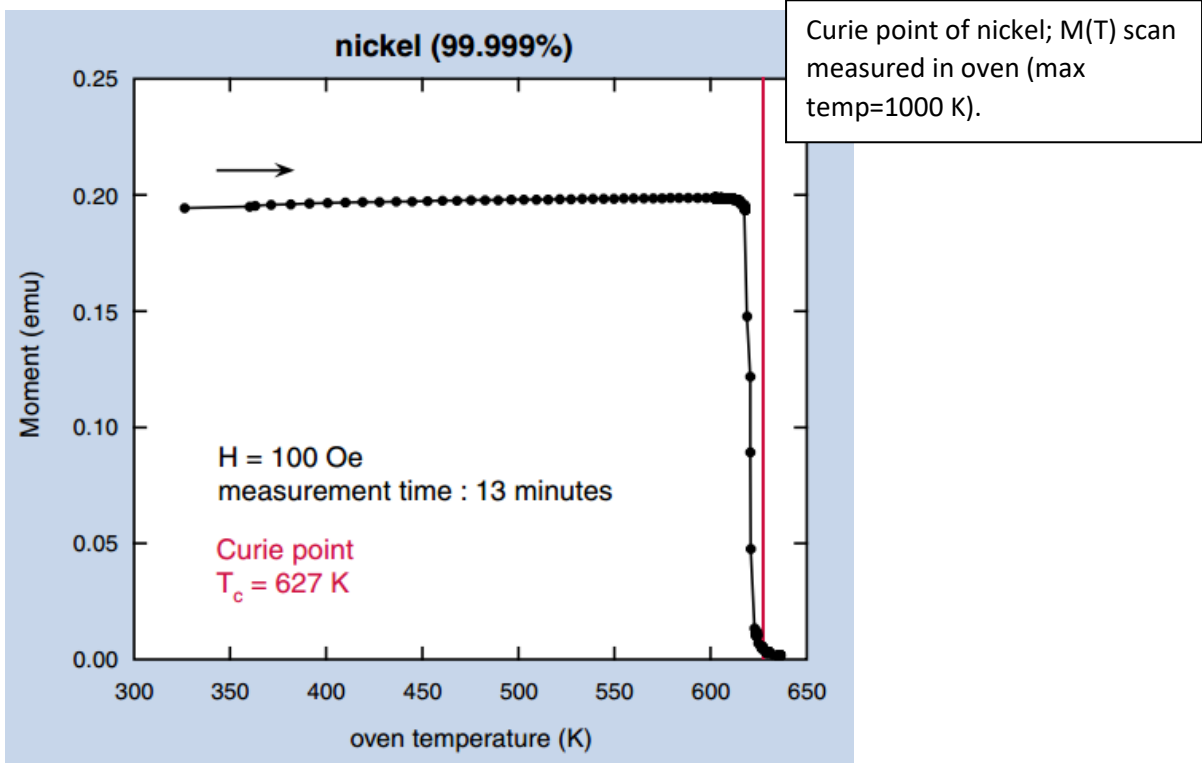
- Fiber optic for sample illumination
- Sample rotation

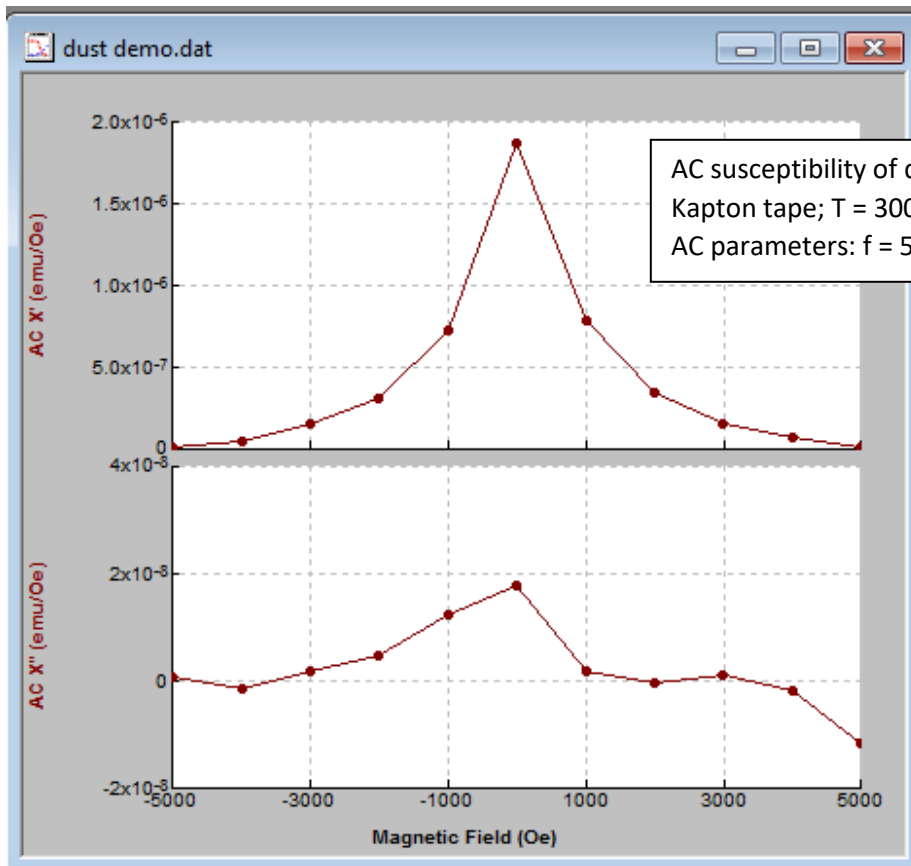
Where is the MPMS-3 used?

- Magnetic materials / media
- Nanomagnetism
- Materials science
- Chemistry
- Fuel cells, energy research
- Superconductivity

Gallery of MPMS-3 data







Dust is magnetic!
 ~10cm of Kapton tape, both clean and dragged through the dust on a shelf in Spintronic Lab

