Measurement of: Magnetic properties

Equipment: Physical Property Measurement System (PPMS)

Property Measured: (i) AC/DC magnetization

Photograph: Physical Property Measurement System (PPMS)

Basic Principle:
It is one of the most versatile low temperature scientific laboratory equipment, designed and developed by M/s Quantum Design. It is an open-architecture, variable-temperature field system optimized to perform a variety of automated measurements like magnetic, thermal and electrical transport. The sample environment allows fields of up to ±14 Tesla and standard temperature ranges of 2 to 350 K. The AC/DC magnetization (ACMS) and vibrating sample magnetometer (VSM) is a powerful measurement tool for magnetic characterization, which are very important aspect for scientific communities.

Capabilities:
1. **AC/DC Magnetization**

   (A). AC Measurements (1.9 K – 350 K)
   AC Frequency Range: 10 Hz to 10 kHz;
   AC Field Amplitude Range: 2 mOe to 15 Oe
   Sensitivity Range: $2.5 \times 10^{-5}$ emu to 5 emu ($2.5 \times 10^{-8}$ Am$^2$ to $5 \times 10^{-3}$ Am$^2$)

   (B). DC magnetization measurements (1.9 K – 350 K)
   AC Susceptibility Measurements: $2 \times 10^{-8}$ emu ($2 \times 10^{-11}$ Am$^2$ @ 10 kHz)

Sample Requirement: Powder and pellet form samples.