Measurement of: Magnetization

Equipment: MPMS-Squid based magnetometer

Property Measured: Magnetization in temperature range = 2 – 350 K and magnetic field range = 0 ± 70 kOe.

Photograph (small size):

Basic Principle: It is a rf-SQUID based magnetometer that needs liquid He for operation. It works with a combination of signal pickup circuit, single JJ SQUID, tank circuit and Flux Locked Loop (FLL) feedback circuit. The magnetic moment (M) of the sample, when it moves up and down, induces current in the pickup circuit. The induced current creates flux in the mutually coupled SQUID-loop, through which sample's M is determined with very high precision.

Capabilities: M(T), M(H), ac susceptibility at frequencies 1 – 1000 Hz, angular dependence (range 0O – 360O) and light dependence (range =370 – 800 nm) in T range =2 – 350 K and H range = ±70 kOe.

Sample Requirement: Samples can be in the form of (nano)powders /bulk /single crystals/thin films/heterostructres. Size: Length L < 9 mm, Cross section diameter < 3.5 mm. For angle dependence sample size ≤ 2 mm and sample M > 10^{-4} emu. For light dependence sample size ≤ 1.5 mm and sample M > 10^{-4} emu.