Measurement of: Electrical, thermal, magnetic measurement low T(2K), high field (14 Tesla)

Equipment: Physical property measurement system

Property Measured: Electrical, thermal, magnetic measurement low T(2K), high field (14 Tesla)

a. Heat capacity
b. AC / D C Magnetization
c. Electro-Transport
   - AC Transport measurement system (ACT) (Resitivity, Hall Effect and I-V Curves)
   - DC Resistivity
   - Rotator

Photograph (small size)

Basic Principle:

It measures the physical properties at low temperatures. The PPMS is Lhe cooled systems and consumes around 30 Lt. Lhe per day

Capabilities:

Heatcapacity Specifications: AC/DC Magnetization AC Measurement System (ACMS)

Temperature Range: 1.9–400 K
Sample Size: 1–500 mg
Resolution: 10 nJ/K @ 2 K

Temperature Range: 1.9-350 K
AC Frequency Range: 10 Hz to10 kHz
AC Field Amplitude Range: 2 mOe to 15 Oe
Sensitivity Range: DC magnetization measurements: 2.5×10^{-5} emu to 5 emu (2.5×10^{-8} Am^2 to 5×10^{-3} Am^2)
AC Susceptibility Measurements: 2×10^{-8} emu (2×10^{-11} Am^2 @ 10 kHz)

Electro-Transport:

AC Transport measurement system (ACT)
AC resistivity, five-wire Hall effect, I-V curve, and critical current.
Specifications:
Current Range: 10 mA to 2 A
Sensitivity: 1 nV @ 1 kHz
Frequency Range: 1 Hz to 1 kHz

DC Resistivity
Uses resistance bridge
Van der Pauw and four-wire resistance measurements
Specifications:
Current Range: 5 nA to 5 mA
Sensitivity: 20 nV

Rotator
Used to get information about angular dependence.
Specifications:
Range: -10˚ to 370˚
Angular Step Size: 0.053˚ for standard resolution; 0.0045˚ for high resolution

Sample Requirement: Solid bulk, poweder, single crystal, thin film

Physical Property Measurement System

(PPMS)

Model:PPMS 6000 (14 Tesla), Make: Quantum design

Temperature range of 1.9–400 K

Temperature sweep rate (0.01–6 K/min.)

A 14 T longitudinal magnet.

MultiVu is Windows™-base control software

Measurement options:

d. Heatcapacity
e. AC / D C Magnetization
f. Electro-Transport
   - AC Transport measurement system (ACT)
     (Resitivity, Hall Effect and I-V Curves)
   - DC Resistivity
   - Rotator

Figure. PPMS at NPL

The PPMS is Lhe cooled systems, consumes around 30 Lt.
Lhe per day

Physical Property Measurement System
(PPMS)
Quantum
Design
Model6000
Electrical, thermal, magnetic measurement low T(2K), high
field (14 Tesla)
Rs. 3.5 Crorers
Solid bulk, poweder, single crystal, thin film
Room no. 39A
Main Building, Ground
Floor
The PPMS is Lhe cooled systems, consumes around 30 Lt.
Lhe per day