

LEAI-70A Apparatus for Determining Curie Temperature of Ferrite Materials



Magnetic materials have wide applications in electricity, communication, electronics, automobile, computer and information storage. Curie temperature is a physical quantity representing the fundamental characteristic of magnetic materials. It reflects the phase transition temperature between ferromagnetic state and paramagnetic state of magnetic materials. This apparatus is designed to study the basic properties of magnetic materials for college physics teaching.

It is based on the characteristic change in magnetic moment of a ferromagnetic material with temperature by measuring the temperature at which a ferromag-

netic sample becomes paramagnetic. By using an electrical bridge circuit in which a platinum resistance is used as the temperature sensor and a digital voltmeter is used to measure the temperature, electrical bridge output voltage (V) and corresponding temperature (T) can be plotted and hence the Curie temperature T_c can be determined. The apparatus is compact, stable, and reliable. It is suitable for modern physics experiments at colleges and universities.

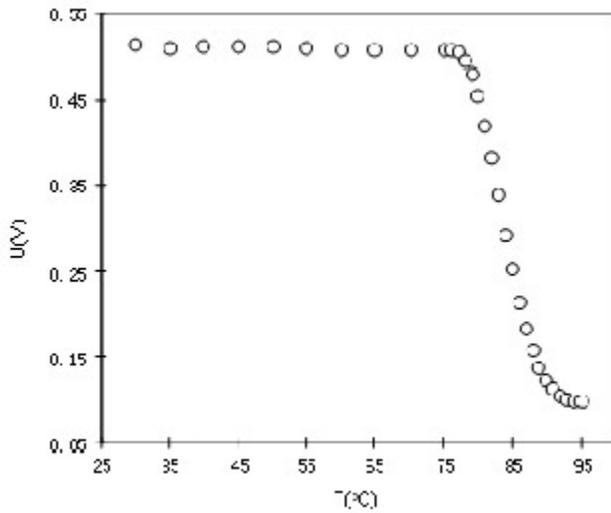
Experimental objectives are as follows:

1. Understand the mechanism of the transition between ferromagnetism and para-magnetism of ferrite materials.
2. Determine Curie temperature of ferrite materials using AC electrical bridge method.

- Easy to use, simple structure, and stable performance
- Ample experimental examples
- Complete system

Specifications

Description	Specifications
Signal source	sine wave, 1000 Hz, 0 ~ 2 V continuously adjustable
AC voltmeter (3 scales)	range 0 ~ 1.999 V; resolution: 0.001 V
	range 0 ~ 199.9 mV; resolution: 0.1 mV
	range 0 ~ 19.99 mV; resolution: 0.01 mV
Temperature control	room temperature to 80 °C; resolution: 0.1 °C
Ferromagnetic samples	2 sets (60 °C ± 3 °C and 80 °C ± 3 °C respectively, 3 pcs/set)



Plot of recorded experimental data