Construct, Conduct & Comprehend Physics Experiments

LEAI-73 Apparatus of Measuring Superconducting Critical Temperature

- 4-lead method has high measuremnt accuracy
- Both manual recording and software acquisition data
- Industrial sample can be stored in room temperature & durable
- Sample has large current range

The superconducting phenomenon was discovered by Dutch physicist Heike Kamerlingh Onnes in 1911. After the successful development of strong magnetic materials and the discovery of the Josephson effect, especially with the discovery of new high critical temperature superconductors of the YBCO (YBa2Cu3O7) series and the BSCCO (Bi2Sr2Ca2Cu3O10) series, superconductivity theory and technology have developed rapidly in practical applications. Superconductive materials are now used in high-energy physics, electrical engineering, electronics, biomagnetics, aerospace, medical diagnostics and other fields.

LEAI-73 Apparatus of Measuring High Temperature Superconducting Critical Temperature is a specially designed experimental equipment for measuring the basic characteristics of superconductors. It has features:

1. The R-T relationship is measured at a certain current using the four-lead method. The critical temperature is determined based on either manual recording or software automatic acquisition.
2. The sample has a large current range, which enables to measure the characteristic curve of temperature increasing or decreasing at different currents and analyze the error caused by the dynamic temperature difference.
3. An industrial BSCCO wire material is used as the experimental sample, which is easy to store at room temperature and will not hydrolysis, so it is durable.

The LEAI-73 apparatus consists of an electric control unit, a low-temperature liquid nitrogen Dewar and an experimental probe bar, on which the sample is wound on. The objectives of conducting experiments using this system are following:

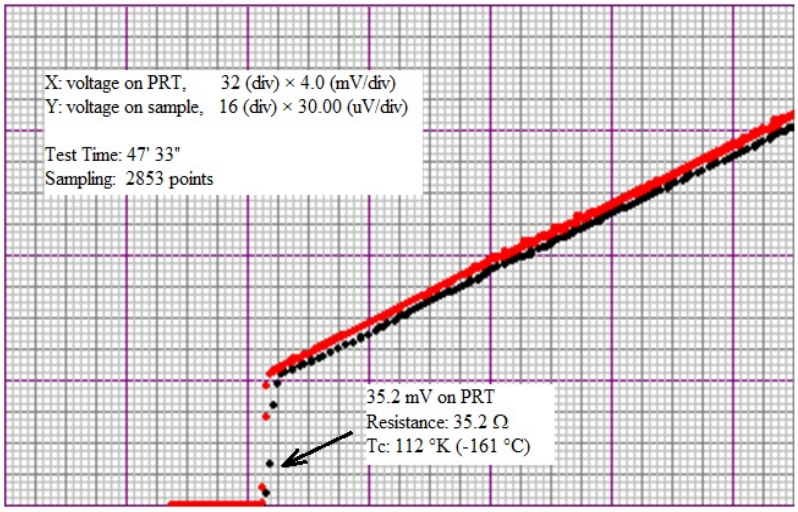
1. Learn liquid nitrogen cryogenic technology;
2. Measure the critical temperature of a BSCCO wire material and master the measurement method of resistance-temperature relationship;
3. Understand the basic characteristics of superconductors and master the basic methods for determining superconductor states.

Specifications

Item	Specifications
Experimental Sample	BSCCO wire
Measurement of Sample Resistance	resolution 0.1 milli-Ohm
Sample Current	0 ~ 110 mA (continuously adjustable)
Operating Temperature	77 K ~ 300 K
Themometer Current	1 mA
Temperature Measurement	resolution 0.1 K
Liquid Nitrogen Container	volume 3 liters, caliber 50 mm
Experimental Probe Bar	length 62 cm
Power Consumption	20 W

Parts

Description	Qty
Main electric unit	1
Liquid Nitrogen Dewar	1
Experimental probe	1
Superconductor sample	1
7-core cable	1
Serail data cable	1
USB to RS232 converting cable	1
Power cord	1
Instruction manual (CD)	1



An example of acquired data

Note: above product information is subject to change without notice.

Lambda Scientific Systems, Inc.
16300 SW 137th Ave, Unit 132
Miami, FL 33177, USA
Phone: 305.252.3838 Fax: 305.517.3739
E-mail: sales@lambdasys.com
Web: www.lambdasys.com