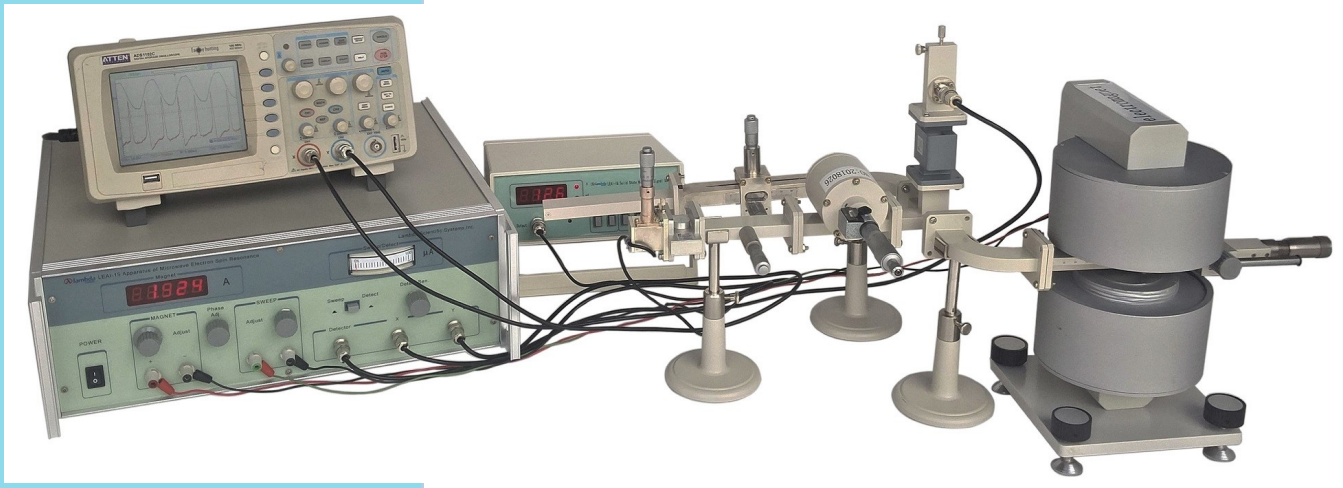
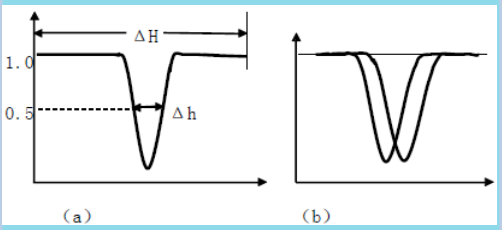
Construct, Conduct & Comprehend Physics Experiments

LEAI-15 Microwave Electron Spin Resonance - Complete Model

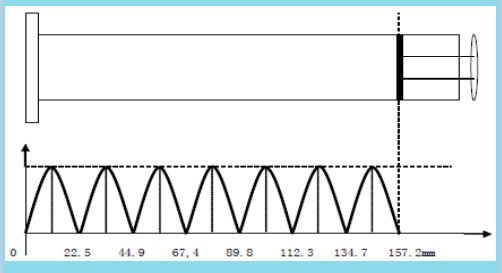


Note: oscilloscope not included

- *Simple structure with stable performance*
- *Ample experimental examples*
- *Affordable*



Waveforms of ESR signal on oscilloscope



Standing wave distribution in sample cavity

Electron spin resonance (EPR) is an important method to reveal the microstructure of a substance by probing the unpaired electrons in the material and analyzing how they interact with surrounding atoms. This method has high sensitivity and resolution, and it is a nondestructive detection technique for analyzing the internal structure of materials. This technique has been widely used in physics, chemistry, biology and medicine, and other fields of study.

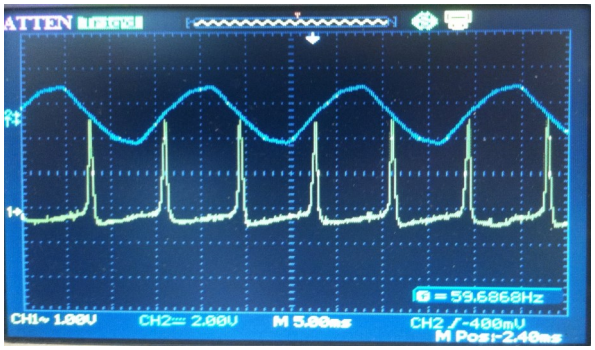
This apparatus of electron spin resonance in microwave band is specially designed for teaching advanced physics at universities and colleges.

Using this apparatus, the following experiments can be conducted:

1. Study electron spin resonance phenomenon.
2. Measure Lande's *g*-factor of DPPH sample.
3. Learn how to use microwave devices in EPR system.
4. Understand standing wave by changing resonant cavity length and determine waveguide wavelength.
5. Measure standing wave field distribution in resonant cavity and determine waveguide wavelength.

Specifications

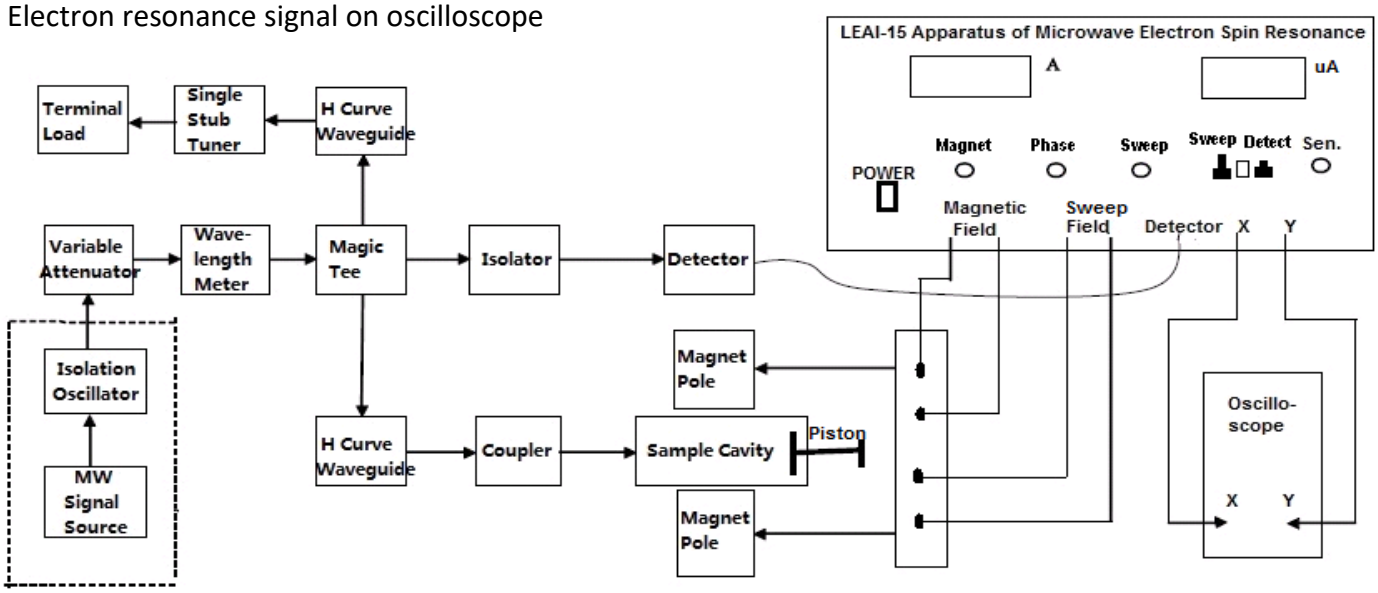
Microwave System:	
Short-circuit piston	adjustment range: 30 mm
Sample	DPPH powder in tube (dimensions: Φ2×6 mm)
Microwave frequency meter	measurement range: 8.6 GHz ~ 9.6 GHz
Waveguide dimensions	inner: 22.86 mm × 10.16 mm
Electromagnet:	
Input voltage and accuracy	Max: ≥ 20 V, 1% ± 1 digit
Input current range and accuracy	0 ~ 2.5 A, 1% ± 1 digit
Stability	≤ $1x10^{-3}$+5 mA
Strength of magnetic field	0 ~ 400 mT
Sweep Field:	
Output voltage	≥ 6 V
Output current range	0.2 ~ 0.7 A
Phase adjustment range	≥ 180°



Electron resonance signal on oscilloscope

Part List

Main Electronic Unit	1
Magnet	1
Support Base	3
Microwave System	1 set
DPPH Sample	1
Cable	7
Instructional Manual	1



Block diagram of experimental system

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