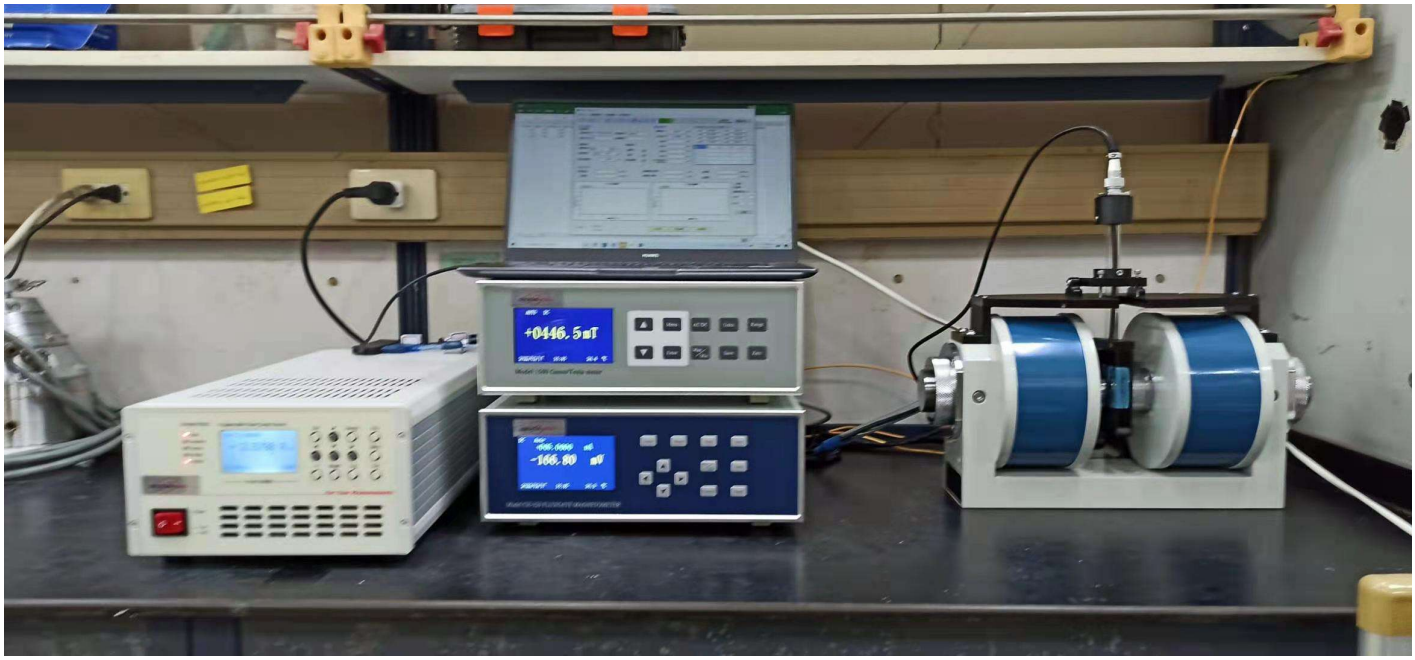
DX-50 Hall Effect Measurement System



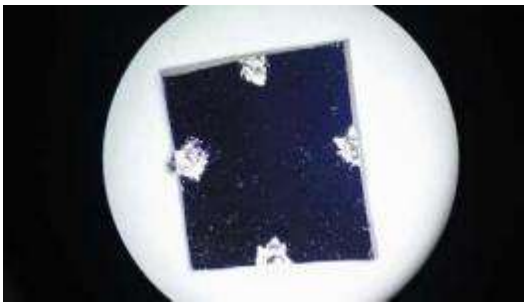
Testable materials:

1. Semiconductor materials: SiGe, SiC, InAs, InGaAs, InP, AlGaAs, HgCdTe and ferrite materials etc.
2. Low impedance material: metal, transparent oxide, weak magnetic semiconductor materials, TMR material, ect.
3. High impedance material: Semi-insulating GaAs, GaN, CdTe, etc.

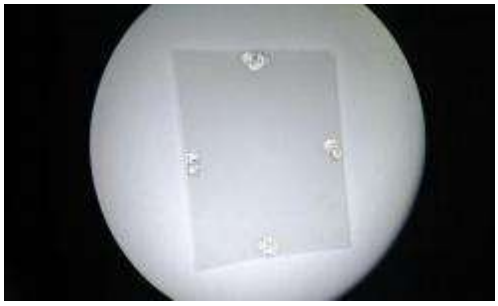
Demonstration of test materials

Single crystal Si

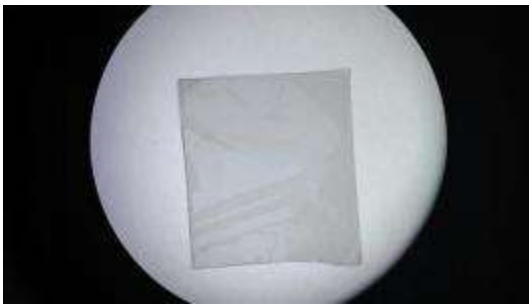
GaAs



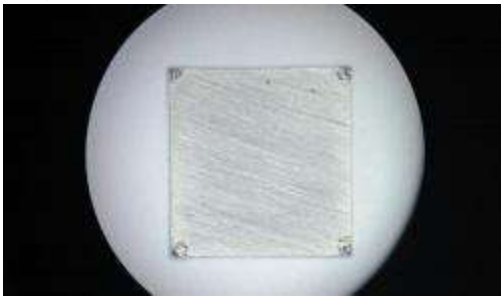
GaN



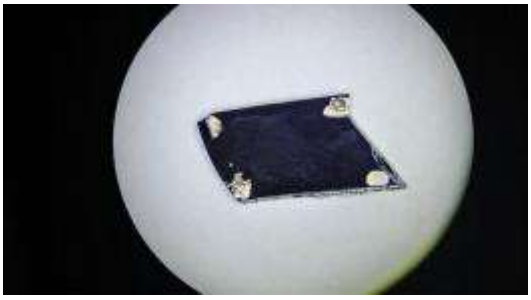
transparent oxide



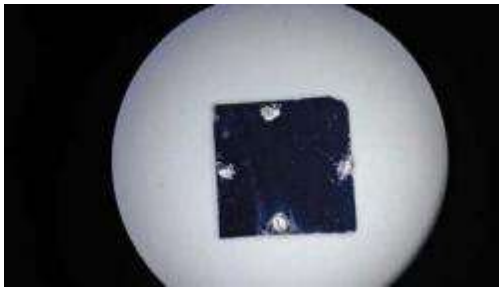
alloy



graphene



InSb



Hall-effect system components:

This system is consisted of electromagnet, high-precision electromagnet power supply, high-precision constant current source, high-precision voltage meter, gauss meter, connecting cables, standard sample, sample mount and the system software. The system contains specially developed DX-320 constant current source, six semi-microvolt meter and complex switching relays for Hall measurements (Integrally assembled switch). These have greatly simplified the connection and operation of experimental. DX-320 can be used alone as a constant current source or micro-volt meter. The system can be used to measure the carrier concentration, mobility, resistivity, Hall coefficient, and other important parameters of semiconductor material. These parameters must be known in advance to understand the electrical properties of semiconductor materials, so Hall Effect measurement system is an essential tool to understand and study of semiconductor devices and electrical properties of semiconductor materials. The results can be calculated by the software automatically, at the same time, it will get Bulk Carrier Concentration, Sheet Carrier Concentration, Mobility, Resistivity, Hall Coefficient, Magneto resistance, I-V curve and I-R curve measurement parameters.

Main technical indicators:

1) Magnetic field intensity: air gap: 10mm, reach 10700Gs
   Air gap: 20mm, reach 7000 Gs

2) Sample current: 50nA~50mA（the min adjustable current: 0.1nA）

3) Measuring voltage: 0.1uV~30V

4) Offers a variety of standard test materials

5) Magnetic field minimum resolution: 1Gs, magnetic field strength range: 0-±1T

6) Cooperate with gaussmeter or digital colorful panel could communicate with computer
   I-V curve and I-R curve test

7) Resistively Range: 10^{-7}~10^{12} Ohm*cm

Resistance range: 10m Ohms-6M Ohns

Carrier concentration: 10^{3}~$10^{23}cm^{-3}$

Mobility: 0.1~10^{8} cm^{2}/volt*sec

Test complete automation, a key processing

No.	Item	Model	Descriptions
1	Electromagnet	DXWD-50	Pole diameter: 50mm Magnetic field: 1.0T at 10mm air gap Magnetic field: 0.7T at 20mm air gap
2	High precision gaussmeter	DX-130	Accuracy: ± 0.30% of reading/Resolution: 1Gs Range :0-3T /probe Thickness: 1.0mm/Length 100mm /digital Rs-232 interface data reading software with CDX-800F probe
3	High precision Power supply	F2031	Digital constant current power supply 5A, 60V, 300W, RS-232 interface can be CNC polar conversion, resolution: 1mA, magnetic field control: 0.1mT
4	Probe and sample holder		Used for fixation, welding hall device, four point probe makes the touch firm.
5	System software		Adjusting the magnetic field can be digitized and current testing ofvarious material parameters
6	Constant current source and electric meter	DX-320	Range: ± 50nA- ± 50mA , Resolution: 0.1nA, continuous and controllable in range, voltage test: 0.1uV-30V
7	Calibration Sample		Silicon Sheet/Ga/As, resistance: 300~500Ω