

Kelvin Probe

for SPV and SPS measurements

In photoelectrochemistry, surface states play an important role in charge transfers and changes in work function of samples.

The Kelvin Probe System allows precise measurement of work function of different semiconducting and conducting materials with high precision and accuracy.



The entire probe is covered with a Faraday cage, shielding it from the environment.



ADVANTAGES:

- ▶ New Kelvin Probe paradigm
- ▶ Measurements in ambient air conditions (temperature and humidity monitoring)
- ▶ Measurements with high precision and accuracy
- ▶ High signal stability
- ▶ Remote service diagnostic implemented

APPLICATIONS:

- ▶ SPV measurements (work function relative to work function of gold reference)
- ▶ Surface Photovoltage Spectroscopy (SPS). The instrument is compatible with xenon lamp and monochromator setup or with LED revolver
- ▶ Corrosion measurements
- ▶ Adsorption/desorption and surface charging studies
- ▶ Catalytic activity studies



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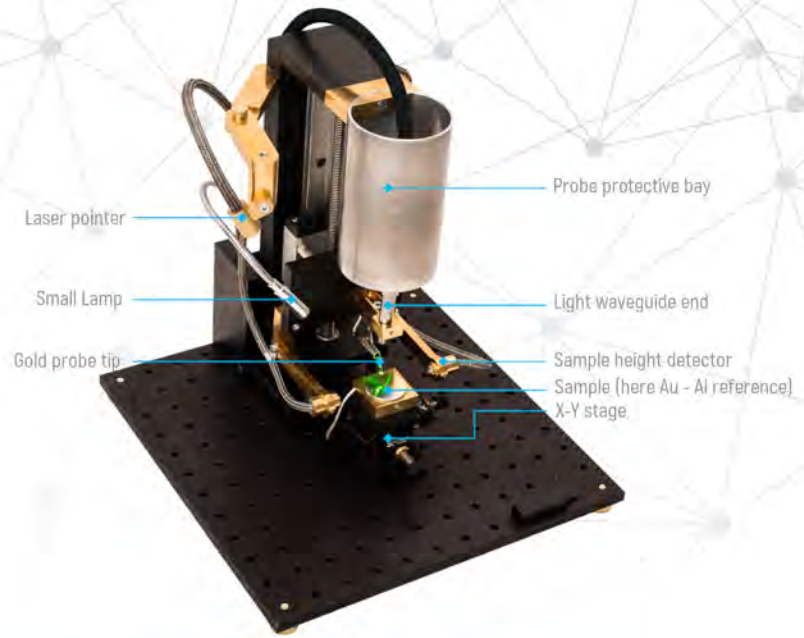


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Kelvin Probe consists of an oscillating gold probe mounted on a firm stand with Z-axis motorized stage, electronic control units and a Faraday cage.

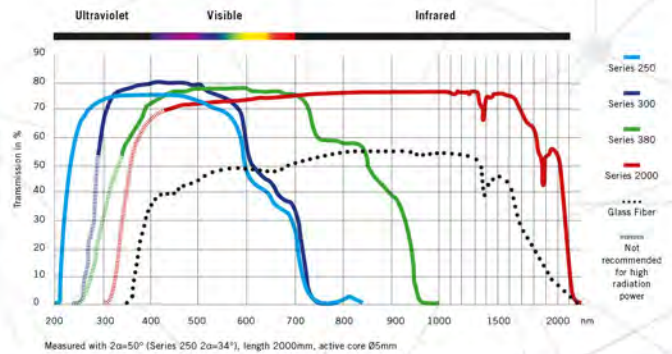
- ▶ A sample is placed on manual or motorized XY-stage with motion range of 1.5 cm in either direction.
- ▶ The probe is attached to a Z-stage that can place it at a desired distance from a sample.
- ▶ A red laser pointer shows place where the probe will oscillate over during measurement.
- ▶ A USB microscope and a white LED are helpful once the system is covered with a Faraday cage.
- ▶ Light is delivered to the sample with liquid waveguide or optic fiber, so the possible EM interference from a light source is eliminated.
- ▶ In idle run or during storage the fragile gold probe is homed into a protected space to prevent accidental damage.
- ▶ The system is also equipped with the automatic sample height sensor.



KELVIN PROBE SPECIFICATIONS

Voltage Range	from -5 V to 5 V
Voltage measurement nominal resolution	0.15 mV
Measurement technology	2-channel lock-in amplifier
Sample Holder	translation stage X-Y, manual (default) or motorized
X-Y stage stroke	15 mm x 15 mm
Tip type	Au mesh, dia. 2.5 mm
Tip Z positioning	motorized Z stage
Positioning with respect to a sample	light barrier
Tip Z positioning resolution	10 μ m
Spectral range for wave guides	200 nm .. 2000 nm (depending on a waveguide)
Liquid waveguides selection (Lumatec)	

SPECTRAL CHARACTERISTICS



Auxiliary sensors	humidity and temperature
Internal Faraday cage illumination	white LED
X-Y positioning aid	laser sample placement indicator
PC connectivity	USB 2.0
Size	40 x 40 x 45 cm
Weight	10 kg