



UHV Scanning Kelvin Probe System

UHVSKP2020

System Description

Our Ultra-high Vacuum Scanning Kelvin Probe (UHVSKP2020) gives the user full access to work function (Φ) and contact potential difference (CPD) measurements under vacuum with the ability to scan a sample area of 20 x 20 mm. Each system comes with the UHV head unit, tip amplifier (located at the mounting port), digital control unit and host PC with dedicated software. The tip can be retracted 100 mm from the sample and approaches normal to the sample. The associated digital electronic unit powers the head unit and provides an interface between the head unit and the data acquisition system. The system comes with a complete user manual, which includes an introduction to work function measurements and a detailed description of the system software, including some examples. The work function resolution of the UHVSKP2020 is 1-3 meV.

The software allows the user digital control of probe amplitude and frequency, mean-spacing and tip potential. There is also automatic measurement of the Kelvin probe signal, work function, signal and work function averaging as well as automatic control of tip to sample mean spacing. Other features include variable scan sizes and 3D charting of the work function data. The data generated can be easily exported to Excel-compatible spreadsheets for further processing.



Ultra-high Vacuum Scanning Kelvin Probe (UHVSKP2020)

Features

- Work function resolution of 1-3 meV
- SPV, SPS and APS options available
- Gaseous or ambient measuring
- Modular system for upgrades and add-ons
- Automatic height regulation

Applications

- Organic and non-organic semiconductors
- Metals and metal alloys
- Thin films and surface oxides
- Solar cells and organic photovoltaics
- Corrosion e.g. protection and resistance



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System Specifications	UHVSKP2020
Tip diameter/spatial resolution	4 - 10 mm
Tip material	Stainless steel
Contact potential difference resolution ($\Delta\Phi$)	0.001-0.003 eV
Scan control	Stepper motor controlled: 20 x 20 mm
Tip retraction	100 mm
Step size	0.5 μm (Z); 2.5 μm (X,Y)
Tracking system	Automatic control of tip-to-sample distance to 0.5 μm
Vacuum capability	2×10^{-11} mBar
Mounting geometry	Normal to sample surface
Mounting flange	DN63 (4.5 inches)
Visualisation	3D maps of surface potential and sample topography
PC	> 21" display, pre-installed system software
Oscilloscope	Digital TFT oscilloscope for real-time signal
Spare tip amplifier	Included
Digital control of:	Tip amplitude, frequency, mean spacing, potential
Averaging	Signal and work function
Detection system	Off-null with parasitic capacity rejection
System includes:	Set-up guide, cables and manual
Warranty	12 months

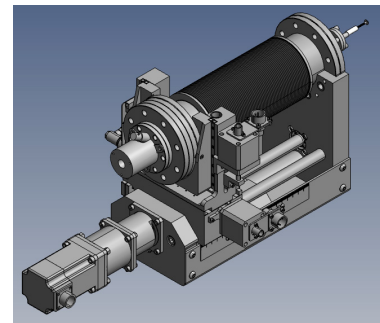
Other Products Compatible with this System*

- Ambient Pressure Photoemission Spectroscopy (APS)
- Surface Photovoltage (QTH or LED)
- Surface Photovoltage Spectroscopy (400-1000 nm)
- Heater stage

*Depending on the configuration of the customer's current vacuum chamber

The Company

KP Technology Ltd was founded with the aim of bringing to the market new surface research tools. These tools have featured in over 250 peer-reviewed client publications in the last 3 years. KP Technology Ltd also performs a significant amount of material research and training consultancy, mostly based upon the work function (Φ) or surface potential evaluation of client samples. KP Technology Ltd holds international patents on their Ambient Pressure Photoemission Spectroscopy (APS) system for measuring absolute workfunction. Along with a strong research and development division and over 500 systems shipped worldwide, this has placed KP Technology Ltd as the leading supplier of Kelvin probes in the world.



Technical drawing of UHVSKP2020

Contact

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KP Technology Ltd is the proud winner of the Queens Award for Enterprise: International Trade 2013

