Impedans
PLASMA MEASUREMENT

Plato™ Probe System

Deposition Tolerant Langmuir Probe

Novel Langmuir Probe designed for use in Deposition Plasma Systems

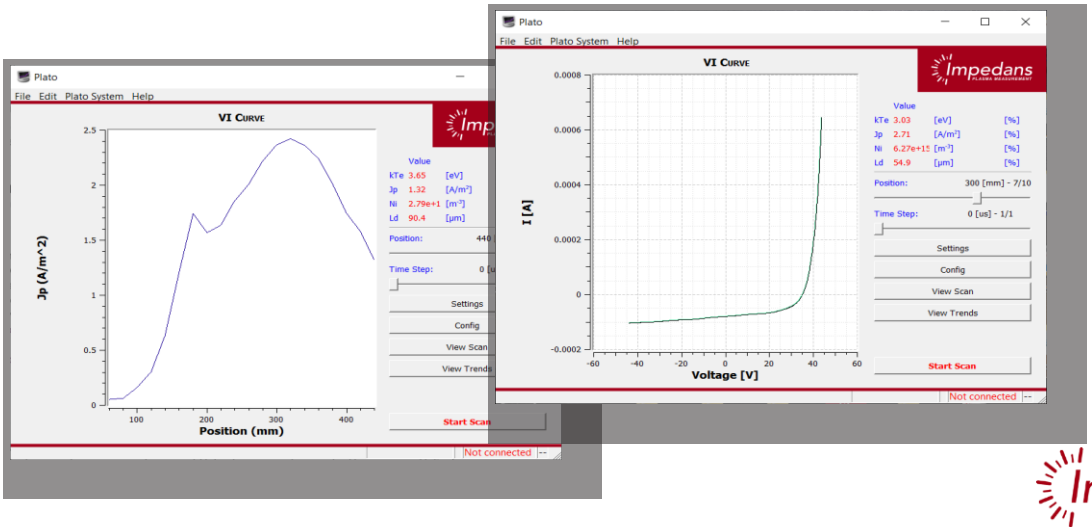
The Plato Probe is a planar Langmuir Probe designed to work in deposition plasmas when an insulating film will be deposited on the probe surface. The deposition tolerant probe can remain inside a plasma reactor while deposition processes are in progress. This allows the plasma parameters such as plasma density, Ion current density and electron temperature to be measured in systems where a standard Langmuir probe would not be suitable, such as plasma enhanced chemical vapour deposition (PECVD) systems. This probe also has a sync function for time resolved measurements, to look at plasma evolution in Pulsed DC and HiPIMS processes with 1 microsecond resolution.

Key Features

- Measures plasma density, ion current density and electron temperature even with an insulating layer covering the tip (up to 10 microns).
- Time averaged, time trend and synchronised pulse profile.
- Integrated linear drive mechanism available to automatically profile spatial plasma uniformity.
- Advanced models for pressure compensation included in the software, with a reanalysis function for old data sets.
- Compatible with DC, Pulsed DC, RF, Pulsed RF, Microwave and other plasma excitation methods.
- 1 microsecond resolution available for pulsed processes, with a TTL port for pulse.

Key Benefits & Applications

- State of the art plasma models built into the software for automatic data analysis.
- Intuitive and user-friendly interface with built in models and graphing functions.
- Compatible with deposition processes where standard DC Langmuir probes cannot be used.
- Robust and durable design to survive in extreme plasma environments.
- Custom probe options including right angle elbows and flexible probe shafts to fit any chamber.
- Provides measurements for fundamental research, process development and model benchmarking.



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Model Specifications

Model #	Product Name	Description
02-0073-01	Fixed Probe 9.5 mm	9.5 mm OD, rigid, Alumina Shaft (<1.4m length)
02-0240-01	Flexible Probe	Rigid tip section with flexible ceramic beaded cable
02-0239-01	Feed-through for flexible shaft models	Feed-through for flexible Plato Probes
02-0238-01	Electronics Unit	VI scanning and measurement electronics

Model #	Product Name	Current Range
02-0507-01	150mm Linear Drive	For rigid probe shafts only
02-0033-04	300mm Linear Drive	For rigid probe shafts only
02-0034-04	450mm Linear Drive	For rigid probe shafts only
02-0035-04	600mm Linear Drive	For rigid probe shafts only
02-0508-01	900mm Linear Drive	For rigid probe shafts only

General Specifications

Probe length	300 mm to 1400 mm, Customisable
Probe tip diameter	7 mm as standard (customisable)
Probe tip material options	Aluminium, Stainless steel
Max. operating temperature	125 °C
Plasma reactor types	DC, Pulsed DC, RF (> 5 MHz), Pulsed RF, Microwave
Linear drive options	150, 300, 450, 600 & 900 mm
Time resolved step resolution	1 µs
Voltage scan range	Floating potential ±30 V
Current range	300 µA to 20 mA
Sensor pulse synchronisation	External sync: TTL input trigger (10 Hz to 10 kHz)

Plato Probe System Plasma Parameter Ranges

Plasma Density	$4x10^{8}$ to $3x10^{13}$ cm^{-3}
Ion Current Density	26 µA/cm^2 to 300 mA/cm^2
Electron Temperature	0.1 eV to 15 eV
Debye Length	$0.4\ \mu m$ to $1.4\ mm$

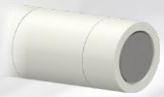
Operating Parameter Ranges

Pressure	< 0.1 Pa to 1,000 Pa < 1 mTorr to 10 Torr
Gas Reactivity	Inert to Highly Reactive

Electronics box

Fixed probe

Linear drive



Probe tip

Flexible probe with surface mount holder