

Materials List for

Building Langmuir Probes and Emissive Probes for Plasma Potential Measurements in Low Pressure, Low Temperature Plasmas

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Citation

Li, P., Hershkowitz, N., Severn, G. Building Langmuir Probes and Emissive Probes for Plasma Potential Measurements in Low Pressure, Low Temperature Plasmas. *J. Vis. Exp.* (), e61804, doi:10.3791/61804 (2021).

Date Published

May 25, 2021

DOI

10.3791/61804

URL

jove.com/video/61804

Materials

Name	Company	Catalog Number	Comments
0.001" thick tungsten wire	Midwest Tungsten Service	0.001"	Emissive probe filament
0.005" thick tantalum sheet	Midwest Tungsten Service	0.005"	Heating filament to generate plasma
1/2" Brass supporting tube			
1/4" Brass Ferrule Set	Swagelok	B-400-SET	Interface between stainless probe shaft and swagelok tube fitting
1/4" OD 304 or 315 stainless steel tube	Swagelok	SS-T4-S-035-20	Used to make the probe shaft, order seamless, sold in 20' lengths
Alumina tubes	COORSTEK	65655, single bore 0.156" OD 0.094 ID	single bore, double bore, quadruple bore, use for support structure for both emissive and Langmuir probes between the probe tip and shaft
Baratron gauge	MKS	Type 127	Display the pressure when there's gas flowing in the chamber
Brass Swagelok Tube Fitting	Swagelok	B-400-1-OR	Tube fittings used on the probe
Brass Swagelok Tube Fitting	Swagelok	B-810-6	Tube fittings used on the probe
Brass Swagelok Tube Fitting	Swagelok	B-810-1-OR	Tube fittings used on the probe
Ceramic liquid	Sauereisen	No. 31 Ceramic Encapsulant Liquid	Mix with No.31 cement powder to make the ceramic paste
Ceramic powder	Sauereisen	Cement Powder No. 31 Off-White	There are Sauereisen cements that cure with water, e.g. No.10 Powder
Gold plated nickel wire	SYLVANIA ELECTRIC PRODUCT		spot-welded to the probe tip to provide supports
Ion gauge controller	Granville-Phillips	270 Gauge controller	Heat up the ion gauge and display pressure inside the chamber
Mechanical pump	Leybold D60 D60AC	D60 D60AC	Bring the pressure down to ~10 mTorr then serve as the backing pump for the turbo pump
needle valve	Whitey	SS-22RS4	Metering Micro-Needle Micrometer Valve 1/4" Tube Swagelok fittings

Power supply	Kepco	ATE 100-10M	Voltage Bias supply of heating filament
Power supply	Sorensen	DCR 20-115B	Heating supply of heating filament
shutoff valve	Kurt J. Lesker	Nupro SS-4BK	Knob handle, for 1/4" tubing, swagelok fittings
Stainless Steel Ultra-Torr Vacuum Fitting	Swagelok	SS-4-UT-A-8	Tube fittings used on the probe
Teflon coated wire	Geyer Systems	P31546	Connect the gold-coated wire to BNC pin
Turbo pump	PFEIFFER	TPH 240 C	Bring the pressure down to 1E-6 Torr
Vacuum grease	APIEZON	L Ultra High Vacuum Grade Grease	Vacuum grease used to lubricate the oring
Viton Orings	Grainger	#031	Round #031 Medium Hard Viton O-Ring, 1.739" I.D., 1.879" O.D
Viton Orings	Grainger	#010	Round #010 Medium Hard Viton O-Ring, 0.239" I.D., 0.379"O.D