

LOW TEMPERATURE PROBE STATION

Technical specifications

Low Temperature Probe Station for thin film resistivity measurements using van der pauw method

Sl. No.	Parameters / Particulars required
1	<p>Chamber design:</p> <ul style="list-style-type: none"> • The probe station should have variable temperature from 80 K to 650 K • Cooled and highly polished radiation shield to reduce the total heat load on to the cold head, including cooled top 2” diameter clear view quartz window for achieving lowest possible sample temperatures. • The cryostat should be continuous flow cryostat system and the cryogen consumption should be equal or less than 0.2 ltr/hr at 80 K (liquid Nitrogen). • A High efficiency multilayer shielded flexible transfer line with optimized radiation shielding to be supplied. • The sample mount should be Gold plated SS having diameter of at-least 2.5 inch with sample holding provision by vacuum for 2cmx2cm area. It should be electrically grounded. • Sample chamber should have at-least 4 ports for connecting four probe arms and provisions for two more ports should be provided for future upgradation. • It should have a ≥ 2” diameter clear view O-ring sealed quartz window adjusted to ensure clear viewing of the sample area and all the probes with the scope.
2	<p>Vibration Isolation:</p> <ul style="list-style-type: none"> • Vibration isolation for chamber should be provided. • The vibration level even after upgrading to cryogenic version should be at least ± 25 nm or better with positional drift of $\leq \pm 80$ nm in 30 min.
3	<p>Probes arms:</p> <ul style="list-style-type: none"> • Four low Frequency/DC probe stations mounted on X-Y-Z translational stages. Each stage should be capable of travelling 25 mm on X-Y direction and 10 mm on Z direction, external control. • Each probe station to have Single Tip coaxial probe arms with replaceable tips. • Vendor to confirm guaranteed leakage current of < 50 pA @ 100VDC • Vendor to supply at-least 25 suitable probe tips (Gold coated Tungsten tips of diameter 10 μm (25 no’s). • Low vapor pressure thermal anchoring grease.
4	<p>Imaging system:</p> <p>The system should include an integrated high resolution (at least 5 μm) imaging system with USB camera for easy viewing and capable of taking pictures. Field of view should be between 2 mm to 8 mm. It should include Fiber optic ring guide and light source.</p>

5	Vacuum pumping system: Suitable Turbo pumping station with gauge; rotary pump and control system to achieve 1×10^{-6} mbar should be provided
6	Temperature controller: Two independent thermocouple input channels, with precise temperature measurement ranging from 80K to 650K and controller unit using PID controller with accuracy of $\pm 1^\circ\text{C}$ and provisions to interface with the personal computer.
7	The probe station system must allow integration with standard electrical characterization instruments such as current source and voltmeter measurement units.
8	Liquid Nitrogen storage Dewar: 50 liters aluminum liquid Nitrogen storage Dewar and inlet adapter with $\frac{1}{2}$ " O-ring seal to accept the probe station transfer line featuring pressure gauge, pressure relief valve, pressurization valve, roller base.
9	Warranty: At least 1 year standard warranty

Additional Requirements:

- OEM should provide necessary service of operation certificate.