



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai - 400076

PR No. 1000033371

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Technical Specifications for Liquid Helium-Based Microscopy Cryostat with Temperature Controller

A. Basic Cryostat:

1. Liquid Helium flow variable temperature microscopy cryostat
2. Low-loss transfer siphon. Entry to cryostat to be parallel to the table.
3. Working Distance \leq 5mm.
4. Temperature range: 3.4K -500K or better.
5. Temperature Stability: \pm 100 mK.
6. Cooldown Time: \leq 10 mins.
7. Vibration Levels: \leq 100 nm.
8. Drift at constant temperature: \leq 1 μ m/hr.
9. Window Material transmission range: 0.2- 5 μ m or better.
10. Sample space \geq 20mm dia and 5mm height.
11. Should have 2 windows top and bottom with suitable sample holders for measurement in both reflection and transmission geometries.
12. Thickness of the cryostat should be less than 4.2 cm to be accommodated between stage and the objective.
13. Windows should be user changeable.
14. 10-pin electrical wiring to the sample should be provided with feedthrough separate from that of sensors and heaters.
15. Weight should be \leq 2 Kgs.
16. Calcium Fluoride and KRS5 window needed.

B. Temperature Controller:

A suitable temperature controller with the following features should be provided

1. Controller should be of the same make as the cryostat.
2. Touch screen interface.
3. Upgradeable to at least 4 channels using expansion slots for additional sensor, heater, PID, and Aux cards.
4. 80W per channel heater output.



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5. Supports all standard sensor types.
6. Supports cryogen level meter cards. Ethernet, GPIB, Serial or USB interface.
- 7.

C. LN2 Dewar:

5 Liter Dewar (Top-up intervals should not be less than 12 hours)

D. Turbo pump with gauge:

1. 35 litre/s (N₂) turbo drag pump.
2. Base Pressure 1×10^{-7} mbar
3. Roughing pump speed: 0.5m³/hr
4. Mains power: 230W
5. Dims 310x330x360mm
6. Weight 17kg. Operating Voltage: 1-ph 115 VAC, 50/60Hz, 230 VAC, 50/60Hz
7. Full-range vacuum gauging
8. DN25 ISO KF Fitting
9. Measurement range 1000 to 5.1×10^{-9} mbar.
10. Pressure display on the controller
11. 3m gauge cable. KF fittings, O-rings, clamps, and adaptors are included.

E. Warranty:

2-year warranty for the entire system should be provided. Delivery should be within 120 days.

F. Eligibility Criteria:

1. The suppliers/ bidders should have installed the system minimum of two places in India.
2. Details of installation location, name of the user to be mentioned etc.
3. User/Customer feedback will also be considered during technical evaluations.