

Tender Notification for the procurement of a helium closed loop cryostat for low temperature optical imaging and spectroscopy at IISc (Last Date for submission of tenders: 4<sup>th</sup> June' 2020)

REF: PH/ASIN/329/2020-21

8<sup>th</sup> May, 2020

Dear Sir/Madam,

Kindly send lowest quotation for the following items on **C.I.P. Bangalore basis**. The quotation should clearly indicate the terms of delivery, delivery schedule, E.D., transportation charges, if any, payment terms etc. The tender should be submitted in two separate sealed envelopes - one containing the technical bid and the other containing the commercial bid, both of which should reach us, duly signed on or before 4<sup>th</sup> June, 2020 by post or in-person.

**Please enclose a compliance certificate along with the technical bid.**

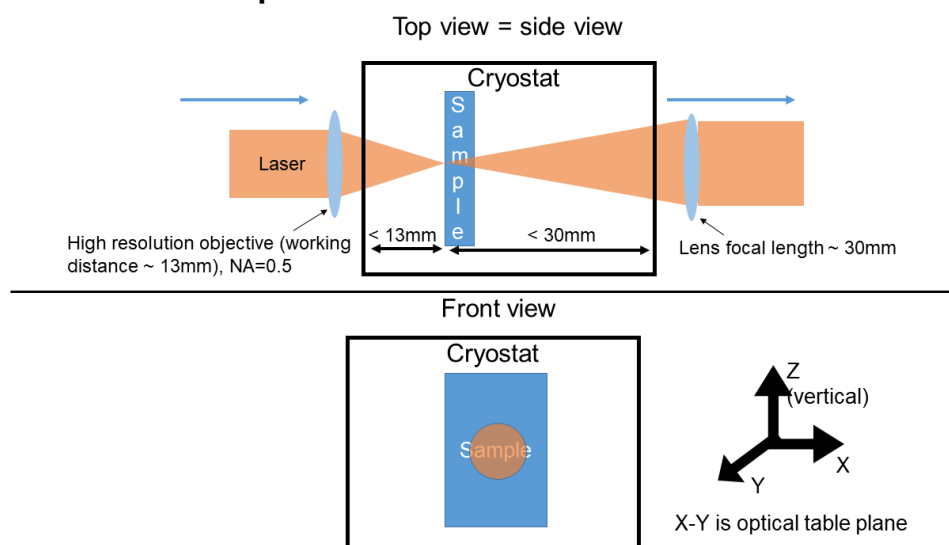
**Specifications of Item:** helium closed loop cryostat for low temperature optical imaging and spectroscopy with the following specifications:

1. The vacuum shroud and radiation shield should allow optical measurement for both reflection and transmission experiments. Working beam direction is horizontal. Please refer to schematic figure.
2. Vacuum shroud should have at-least two optical windows made of fused silica or similar non-birefringent material. Type of window: Transmission should be more than 90% for wavelength range 0.2 to 1.5 microns. Window diameter > 15mm.
3. A narrow optical shroud accessory that allows working distance of sample from front optical port < 13mm, from back optical port < 30 mm in transmission geometry. Please refer to schematic figure. The accessory should have optical windows similar to the specifications above.
4. Appropriate blanking plates for the window ports for non-optical operation of the cryostat.
5. The optical windows on the vacuum shroud should be at room temperature while the cryostat is running.
6. Base temperature at sample less than 3.5 K for more than 80 hours.
7. Extended temperature up-to 350K.
8. Cool down time to 3.5K < 3.5 hours for operation with narrow optical shroud accessory. Cool down time to 3.5K < 2.5 hours without narrow optical shroud accessory.
9. Temperature stability better than 20mK/hour at sample.
10. Appropriate temperature controller with at least one PID channel (and through integrated software), or through external temperature controller. Appropriate heater mounted on sample stage for temperature control.
11. Calibrated temperature sensors at cold head and sample stage positions.
12. Sample space at least 20 mm in diameter.
13. Vibration levels in all directions < 6 nm peak to peak. If performance not shown at time of installation, vendor should provide factory test report for the

supplied system. Test data from other previously-supplied systems will not be sufficient.

14. Drift stability < 50 nm/hour peak to peak.
15. The system should have at least 15 pins for user experiments. These pins should have (resistive) wires which are thermally lagged at platform stage (1<sup>st</sup> stage/30K stage). These wires should be connected from atmospheric side to vacuum side for DC electrical measurements.
16. Appropriate manifold dry vacuum pumping system (no oil-based pumps).
17. Cryostat should work on Gifford-McMahon (GM) or Pulse-Tube (PT) technology.
18. Appropriate amount of Helium-4 gas for the system. Appropriate air or water cooled helium compressor with full charge of high purity Helium gas, with appropriate flexible lines/hoses. The hose lines should be equal to or longer than 3 meters. Electrical and cooling water requirements for the compressor must be specified, and the air/water chiller should be included in the quote.
19. Maintenance interval for the compressor must be at-least 30,000 hours and for the cold head must be at-least 20,000 hours
20. The system should be mountable on an optical table and should not require any stand to support the system. All necessary equipment to mount the system on the table should be provided.
21. Appropriate computer software for control of the cryostat.
22. Related accessories such as connectors, adapters, cables etc. necessary for independent operation of the system at 220V, 50Hz, single phase.
23. One-year warranty.
24. Base sample temperature should be demonstrated at time of installation.
25. The vendor should have a track record of having previously supplied at-least five similar equipment (cryo-free microscopy cryostats, with minimum base temperature < 5K) in India (please furnish the details). It would be desirable to provide 2-3 reference letters from customers in India.

### Schematic of setup



### Optional Items

1. The supplier must quote for 2<sup>nd</sup> and 3<sup>rd</sup> year comprehensive warranty as optional item.

2. The supplier must quote for turbo-molecular pumping option. Specifications of this pump should be indicated.

**Terms and conditions:**

1. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
2. The payment will be through confirmed irrevocable Letter of Credit.
3. The lead time for the delivery of the equipment should not be more than 6-8 months from the date of receipt of our purchase order.

Yours Sincerely,



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