

**Tender Notification for the procurement of a cryogen-free variable temperature
superconducting magnet system**

(Last Date of submission of tenders: **20th October 2017**)

REF: IAP/CU/OT/2017-18/01

Kindly send your best quotation for the following item on C.I.P. Bangalore basis. Your quotation should clearly indicate the terms of delivery, delivery schedule, E.D., 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 1700 hours, 20th October 2017.

The bids should be addressed to:

The Chairman,
Department of Instrumentation and Applied Physics,
Indian Institute of Science,
Bangalore 560 012, INDIA.

The bids should be sent to:

Dr. Chandni U.
Assistant Professor,
Department of Instrumentation and Applied Physics,
Indian Institute of Science,
Bangalore 560 012, INDIA.
Email: chandniu@iap.iisc.ernet.in

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

Yours Sincerely,

The Chairman
Department of Instrumentation and Applied Physics.

Specifications of the product - Cryogen-free variable temperature superconducting magnet system with the following components and minimum specifications:

1. Pulse-tube based cryo-free refrigerator system with two stages of cooling and a cooling power of at least 1W at 4.2 K and 40 W at 45 K. Specify the pulse tube model and make.
2. Variable temperature insert (VTI) with appropriate heat shields and sample in vacuum option. Temperature range of operation must cover ~ 1.6 K - 300 K. Provide supporting data.
3. Motorized needle valve, with PID and associated computer control.
4. Sample space of at least 45 mm.
5. A 9T vertical field magnet with homogeneity better than 0.1% over a 1cm sphere. Magnet should be compatible with the sample space mentioned above. Appropriate magnet power supply and relevant accessories, including persistent switch and quench protection circuit, must be included.
6. Appropriate water cooled helium compressor with full charge of high purity Helium gas, with at least 15m flexible SS lines. Power consumption of the compressor not to exceed 8 kW at 50 Hz. Electrical and cooling water requirements for the compressor must be specified.
7. Cool down for the VTI to base temperature without any load should be ~ 3 hours or less. (Provide supporting data).
8. Maintenance interval for the compressor must be at least 30,000 hours and for the cold head must be at least 20,000 hours.
9. Calibrated field independent temperature sensors mounted on the sample position and magnet plate for high precision temperature measurements. Additional temperature sensors on cryocooler 1st and 2nd stages, 1.5 K Pot, persistent switch and VTI.
10. Heaters at the sample position and VTI.
11. At least 10 twisted pairs of resistive wiring at the sample position.

12. Two electrical feed through (Fischer connectors) for (1) heater and temperature sensor wiring and (2) sample wiring.
13. Temperature controller with at least 2 PID control loops, compatible with RTDs and diodes.
14. Additional blank port at the top of the probe, with access to sample space for additional wiring in future, if necessary.
15. Appropriate safety pressure release valve on the cryostat.
16. Appropriate dry scroll pump for the VTI space including hoses, valves and fittings required for VTI operation to be supplied.
17. Appropriate system software suite (preferably in LabVIEW) to control all aspects of the system operation and measurements including magnet control, with flexibility to add modules by the user for customized measurements.
18. The system should be suitable for future upgradation to lower base temperature of ~ 300 mK.

Optional Items:

1. Pumping station with turbo pump and rotary-vane backing pump.
2. Mechanical sample rotator to rotate sample from in-plane to out-of-plane magnetic field. Specify range of rotation and resolution. This should work for sample in vacuum, and preferably be operated via computer control.
3. Two semi rigid high frequency coax lines (UT85 SS-SS, frequency up to 18 GHz) with SMA connector on one end; left loose at the sample end.
4. Vibration isolating support mount.

Terms and conditions:

1. The vendor should have a proven track record in terms of prior installations and technical support in India. (Please furnish the contact details of the customers).
2. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).
3. The clauses of on-site installation and training need to be specified, and ideally provided free of cost.
4. The quotation should be in the currency of the country of origin.
5. The payment will be through confirmed irrevocable Letter of Credit.
6. Alternate modes of payment can be suggested with suitable justification.
7. Basic tool kit for installation of the pulse tube system should be provided free cost.
8. The instrument must carry a comprehensive warranty of 3 years from the date of installation.

Yours Sincerely,

Dr. Chandni U.
Assistant Professor,
Department of Instrumentation and Applied Physics,
Indian Institute of Science,
Bangalore- 560 012, INDIA.