

INDIAN INSTITUTE OF TECHNOLOGY GOA

At Goa Engineering College Campus

Farmagudi, Ponda, Goa 403401

E-mail: purchase_r.d@iitgoa.ac.in

GSTIN: 30AABAI1653D1ZF

PAN: AABAI1653D

TAN: BLRI08261B

Enquiry No: IITGOA/R&D/2020-21/005

Date: 15/01/2021

IIT Goa invites sealed quotations in two bid form for the supply of below mentioned item.

Sl. No.	Description of Item	Qty.
1	Closed-cycle Cryogen-free Variable-temperature Microscopy-Cryostat (Detailed specifications attached as Annexure-A)	01 System.

Terms & Conditions

1. Quotation must be valid for at least 90 days.
2. The GSTIN should invariably be mentioned in your offer.
3. Kindly attach a compliance certificate along with the technical quote.
4. Prices: Prices should be quoted in INR – F.O.R., IIT Goa basis only.
5. Payment terms: 90% of the payment will be done after the delivery of item and receipt of original invoice and 10% after successful installation of item and submission of installation report by PI.
6. Delivery and installation should be made within 90 days of getting a confirmed order.
7. Supplier should provide minimum 1-year warranty and should also quote the price for extended period warranty.
8. The suppliers shall provide the banking details along with their quote on their letterhead duly signed and stamped.
9. The successful bidder has to submit a Performance Guarantee Bond for 3% of the Purchase Order value and valid till one year plus 60 days OR up-to warranty period whichever is later from the date of issue of Purchase Order. Performance Guarantee Bond may be submitted within 15 (Fifteen) days from the date of order acknowledgment as a successful bidder.

10. It is mandatory for bidders to quote items having Local Content more than 20%. Refer revised Public Procurement (Preference to Make in India), Order 2017 P- 45021/2/2017 – B. E. II dated 04.06.20 issued by DPIIT, Ministry of Commerce and Industry, Govt. of India.
11. Quotations shall be submitted in two parts;
- Part – I (Technical)** should contain all the technical details and specification of the product. It should contain unpriced bid along with terms and conditions, compliance certificates, proprietary certificates (if applicable), any other certificates/details etc. This envelope should be marked as “Technical Bid”
- Part -II (Financial)** The financial bid of the above item should be in a sealed envelope marked as “Financial Bid” and should contain financial terms and conditions.
12. IIT Goa reserves the right to accept and/or reject any/all bids without assigning any reason in public interest.
13. For any clarification, you may kindly contact Dr.Santosh Kumar (email: skumar@iitgoa.ac.in) and Research & Development office (purchase_r.d@iitgoa.ac.in) till 25.01.2021.
14. .All sealed quotations must be super scribed with the tender enquiry number and should reach to the Assistant Registrar (Research & Development), IIT Goa, at Goa College of Engineering Campus, Farmagudi, Ponda, Goa, 403401 by 17.00 Hrs. on or before 05.02.2021.

Sd/-

Asst. Registrar (R&D)

Specification

S.No.	System/Component /Operation	Description
Part A: The base Microscopy Cryostat System		
01		<p>The base system of a Variable-temperature Microscopy-Cryostat must include the following necessary components, control units, and control software:</p> <ul style="list-style-type: none"> - a vacuum chamber with a cold-shield chamber; with appropriate arrangements for integrating with 30 mm and 60 mm optomechanical cage-systems centered at an optical axis of a vertically mounted microscope objective/aspheric lens in the cold-shield chamber - vacuum pumps (backing (dry) and turbo) matching the volume requirement of the vacuum chamber, - a cryocooler, - a compressor for the cryocooler, - a suitable water chiller for the compressor, - a suitable size cold-plate/sample space within the cold-shield chamber; should be compatible with other types of vacuum chambers/cold-shields offered by the manufacturers; should have an integrated & calibrated Cernox temperature sensor, - appropriate arrangements on the cold-plate for mounting the XYZ nanopositioners stacks and the XYZ scanners stacks, - appropriate arrangements on the cold-plate for mounting the low temperature microscope objective/aspheric lens objective vertically, - appropriate arrangements of mounting a heater-cum-sample plate (integrated with a calibrated temperature sensor) on top of the nanopositioners plus scanners stacks, - suitable PCB based sample holder with minimum 10 electrical contacts with a possibility of electrical insulation from the positioning/scanning stages, - a thermal link between the cold-plate and the sample-plate for efficient cooling/heating of the sample, - a thermal link between the cold-plate and the microscope objective/aspheric lens objective, - N-BK7 optical windows from sides and top; both on a vacuum chamber and on a cold-shield chamber, - a high Numerical Aperture ≥ 0.80 Apochromat microscope objective for a high collection-efficiency measurement, - a high Numerical Aperture ≥ 0.65 Aspheric lens objective for measuring the devices where a relatively longer vertical clearance is required, - an optical table with 4 No. of pneumatic vibration isolator legs and with an air compressor for its automatic levelling, - control units (temperature, position, etc.) to control various components of the cryostat,

	<ul style="list-style-type: none"> - control software and libraries to interface with various control units of the cryostat and with various programming platforms like Python, C++, Labview, etc. - remote operation using a hand-held touch-screen device, <p>The detailed specifications of all above components, control units, and control software are detailed below:</p>	
02	Cryostat should be fully cryogen-free, i.e., no requirement of liquid Helium and/or liquid Nitrogen at any point of time.	
03	The cryostat pumping kit, cryocooler and vacuum chamber should be fully integrated into a research-grade optical table.	
04	No parts of the cryostat except for the sample space, vacuum chamber and related mounts should be mounted on the table. This would ensure maximum working space on the optical table.	
05	<p>Computer-controlled operations of:</p> <ul style="list-style-type: none"> - vacuum pumping of the cryostat chamber, auto-start of turbo vacuum-pump once backing vacuum-pump reached to the required minimum vacuum level - cooling-down and warming-up of the cryostat, and - temperature of the heater-cum-sample plate mounted in the cryostat - XYZ motions of the sample plate <p>All above operations should be performed using a remotely controlled hand-held touch-screen device.</p> <p>Software for remote control should be provided along with libraries for integration with Python, C++, Labview, etc.</p>	
06	Compressor	<p>The system should include a water-cooled compressor to avoid temperature fluctuations in the laboratory.</p> <p>The compressor must meet following specifications:</p> <p>Single phase, 230/240V, 50Hz, ≥ 2.6 kW@50Hz, ≥ 2.5L/min cooling water.</p> <p>Minimum 6 m flexlines should be offered to connect the compressor with the cold-head of the cryocooler. The bidder/supplier must quote for longer length flexlines if they are not provided within the cost of the base system.</p>
07	Water chiller	A suitable water chiller matching the water-temperature, water-pressure, water-flow rate requirements of the compressor should be provided.

08	Optical table, legs, and its air compressor	<p>A research-grade optical table with two tuned dampers and with following specifications should be provided:</p> <ul style="list-style-type: none"> - size: 1200 mm X 3000 mm - thickness: \geq 300 mm - mounting holes: Metric, M6 - mounting hole pattern: Metric, 25 mm grid - mounting holes border: Metric, 12.5 mm - 4 No. pneumatic vibration isolators legs of height >590 mm and with automatic releveling mechanism - an air compressor with max air pressure not less than 110 psi, with a noise level not more than 40 dB at 1 m, and working on a single phase 230/240 VAC, 50 Hz mains supply
09	Spacing and mounting provisions in the vacuum chamber/cold shield/cold-plate	<p>Suitable size vacuum-chamber and a cold-shield for enclosing a sample space/cold-plate of diameter not less than 70 mm should be provided to host:</p> <ul style="list-style-type: none"> - a low temperature compatible microscope objective mounted vertically - an aspheric lens objective (if microscope objective is not used) mounted vertically - nanopositioners and scanners stages mounted on the cold-plate for holding and movement of sample/device. <p>Vacuum chamber should have enough space for mounting the nanopositioners stacks, scanners stack, and including all necessary mounting parts for thermal connections between a cold plate and sample plate (objective) to thermalize the sample plate (objective) to 4K.</p>
10	Positioning interface in the vacuum chamber/cold shield	<p>The vacuum chamber/cold-shield/cold-plate should host a stack of existing nanopositioners set consisting of TWO attocube ANPx101, ONE ANPz102 and ONE scanner set ANSxyz100. Another such stack should fit on the cold plate.</p>
11	Optical windows and Window materials and anti-reflection coating	<p>5 No. of optical windows (4 on sides and 1 on top) both on the vacuum chamber and on the cold-shield. The manufacturer/supplier must provide some standard sizes and thicknesses, and available anti-reflection coating of the windows. The diameters and thicknesses of the windows and the type of anti-reflection coating will be mentioned in the purchase order.</p>

		<p>Windows should be made of N-BK7 glass.</p> <p>The heights of the centers of the side windows must match the height of the top of the heater-cum-sample plate.</p> <p>The top window must be centered on the axis of the vertically microscope objective/aspheric lens objective.</p> <p>All windows should be mounted at small angles to avoid back reflections of excitation laser and collection signal on the same paths.</p> <p>Transmitted Wavefront Distortion $< \lambda/10$.</p> <p>Surface Quality: 20/10 (Scratch/Dig).</p>
12	Thermal links/coupling devices	<p>A thermal link/coupling device integrated with a Cernox temperature sensor and with a heater must be provided to control the temperature of the sample-plate/sample in the range of minimum achievable temperature 4K to 325K.</p> <p>The sensor's specifications and the calibration file should be provided for a temperature range wider than the control range of 4 k – 300 K. The sensor should be made of non-magnetic materials.</p> <p>A thermal link/anchoring of a sample-plate to cold-plate/finger, compatible with positioners and scanners should be provided, which should be made from gold plated copper.</p>
13	Temperature Control	<p>It should cover a temperature range of 4 K to 300 K.</p> <p>It should have temperature stability of $<20\text{mK}$ (peak-to-peak).</p> <p>It should have a cooling power $>140\text{mW}$ at 5 K.</p>
14	Vibrational Stability of the cold-plate	<p>It should have a vibration stability of $<5\text{ nm}$ (peak-to-peak, 1500 Hz bandwidth).</p>
15	Vacuum chamber/sample space	<p>Enough to accommodate to low temp XYZ positioners, XYZ scanners, thermal links, the sample stage/PCB based sample stage, low temperature microscope objective/aspheric lens objective.</p>

16	Sample environment	Sample should be in a cryogenic vacuum space. The base pressure in the sample chamber should be $<5e-6$ mbar and leak rate should be $<5e-9$ mbar l/s
17	Vacuum pumping	The vacuum chamber/cold-shield chamber must be pumped using a two-stage (backing (dry) and turbo) non-cryogenic vacuum pumping method to a pressure $<1e-4$ mbar before the cool-down. A user should have a control to set this pressure.
18	Dry vacuum pumping	Oil-free vacuum pumps with an appropriate vacuum gauge covering a range wider than the base pressure should be provided.
19	Electrical wiring for nanopositioners, scanners, heater-cum-sample plate, and PCB based device mount	Fixed, thermalized plugs at 4K, not less than 30 electrical contacts, no clamping of wires, all wires with less than 3 Ohm resistance
20	Sample exchange	Easy access for sample exchange via removal of vacuum chamber/cold-shield
21	Apochromat microscope objective	Apochromat microscope should be mounted vertically in the cold-shield chamber, and it should have following specifications: <ul style="list-style-type: none"> - apochromat range ≤ 710 to ≥ 970 nm - Numerical Aperture NA ≥ 0.80 - Working Distance WD ≥ 0.6 mm - Anti-Reflection coating ($> 80\%$ transmission) ≤ 450 nm to ≥ 970 nm - Clear aperture on top of the microscope objective ≥ 4.5 mm
22	Aspheric lens objective	Aspheric lens objective should be mounted vertically, and it should have following specifications: <ul style="list-style-type: none"> - Numerical aperture NA ≥ 0.65 - Working distance WD ≥ 1.5 mm - AR coating ($> 80\%$ transmission) ≤ 450 to ≥ 970 nm - Maximum diameter 12 mm
23	There should not be any glass window/shield between the sample/device mount and the objective.	
24	Depending on a height of the sample, there should be provision to FIX an objective at a certain height so that FOCUS of the collection/excitation can be achieved using a Z-axis nanopositioner and/or a Z-axis scanner.	

25	A feedthrough ring should be supplied with the base system and it should have a provision of enough No. of blind flanges for onsite upgradations with the DC wiring/high-frequency co-axial SMA wiring/fiber patch cables integrations.
26	On site installation of the microscopy cryostat (both the optical table and the cryostat) of the system.
27	IIT Goa is currently located at its temporary campus, and we are expecting to move to our permanent campus in 2-3 years or so. Thus, the manufacturer/supplier must have to agree to re-install the complete system on the permanent campus on payment of an additional cost. The manufacturer/supplier must provide a projected cost of this re-installation.
Part B: Optional items	
28	The price of a set of compatible nanopositioners and scanners should be quoted.
29	The upgradation charge for increase of the size of the optical table to 1500 mm X 3000 mm.
30	The price of a suitable vacuum chamber/cold-shield that could be used for investigating the photonic integrated circuits should be quoted. The chamber must have to be compatible with the existing cryocooler and the sample plate. The upgradation charges of the feedthrough ring with 2 No. FC/APC and 2 No. FC/PC Fiber patch cables should also be quoted.
31	If available then the price of a suitable vacuum chamber/cold-shield that could be used to investigate the photonic integrated circuits should be quoted. The chamber must have to be compatible with the existing cryocooler and the sample plate.
32	The upgradation charges of the feedthrough ring with minimum 2 No. of high-frequency co-axial SMA connectors should be quoted.

PRICE BID FORMAT**(To be printed on letterhead of the bidder)**

S.No.	Item description	Qty.	Rate	Total
A	Closed-cycle Cryogen-free Variable-temperature Microscopy-Cryostat <i>(Detailed specifications attached as Annexure-A)</i>			
B	GST _____ % of (A) HSN Code/ SAC Code _____			
Grand Total(A+B)				

Amount in Words _____ only.

#HSN Code: “Harmonized System of Nomenclature Code No.” and SAC Code: “Service Accounting Codes Code No.”

1. Delivery Mode: Delivery at IIT Goa, at site only.
2. Terms of payment: 90% of the payment will be done after the delivery of item and receipt of original invoice and 10% after successful installation of item and submission of installation report by PI.
3. Validity of the bid: 90 days from the date of submission of quotation/tender.

Place: Signature.....
Name
Company Name & Address:

Date: Affix Rubber Stamp:

Note: Price Bid should be submitted in given format only. For additional information items above format may be typed and used.

Annexure-C

FORMAT FOR PERFORMANCE GUARANTEE BOND

(To be typed on Non-judicial stamp paper of the value of Indian Rupees of One Hundred) (TO BE ESTABLISHED THROUGH ANY OF THE NATIONAL BANKS (WHETHER SITUATED AT GOA OR OUTSTATION) WITH A CLAUSE TO ENFORCE THE SAME ON THEIR LOCAL BRANCH AT GOA OR ANY SCHEDULED BANK SITUATED AT GOA. BONDS ISSUED BY CO-OPERATIVE BANKS ARE NOT ACCEPTED.

To,
The Registrar,
Indian Institute of Technology, Goa
Farmagudi, Ponda,
Goa – 403401

LETTER OF GUARANTEE

WHEREAS Indian Institute of Technology, Goa (Buyer) have invited Tenders vide Tender No..... Dt. for purchase of
AND

WHEREAS the said tender document requires that any eligible successful tenderer (seller) wishing to supply the equipment / machinery, etc. in response thereto shall establish an irrevocable Performance Guarantee Bond in favour of “**Registrar, Indian Institute of Technology, Goa**” in the form of Bank Guarantee for Rs (**3% (three percent) of the purchase value**) and valid till **one year or upto warranty period whichever is later** from the date of issue of Performance Guarantee Bond may be submitted within 15 (Fifteen) days from the date of Order Acknowledgment as a successful bidder.

NOW THIS BANK HEREBY GUARANTEES that in the event of the said tenderer (seller) failing to abide by any of the conditions referred in tender document / purchase order / performance of the equipment / machinery, etc. this Bank shall pay to Indian Institute of Technology, Goa on demand and without protest or demur Rs..... (Rupees.....).

This Bank further agrees that the decision of Indian Institute of Technology, Goa (Buyer) as to whether the said Tenderer (Seller) has committed a breach of any of the conditions referred in tender document / purchase order shall be final and binding.

We, (name of the Bank & branch) hereby further agree that the Guarantee herein contained shall not be affected by any change in the constitution of the Tenderer (Seller) and/ or Indian Institute of Technology, Goa (Buyer).

Notwithstanding anything contained herein:

1. Our liability under this Bank Guarantee shall not exceed Rs. (Indian Rupees only).
2. This Bank Guarantee shall be valid up to(date) and
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only if IIT Goa serve upon us a written claim or demand on or before (date).
4. This Bank further agrees that the claims if any, against this Bank Guarantee shall be enforceable at our branch office at situated at (Address of local branch).

Date:

Yours truly,
Signature and seal of the Guarantor:
Name of Bank:

Instruction to Bank: Bank should note that on expiry of Bond Period, the Original Bond will not be returned to the Bank. Bank is requested to take appropriate necessary action on or after expiry of bond period.

Annexure-D

Declaration of Local Content

(To be given on company letter head - For tender value below Rs.10 crores)
(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for
tender value above Rs.10 crores)

Date: _____

To,
The Registrar,
Indian Institute of Technology Goa,
At GEC Campus, Farmagudi, Ponda - Goa

Sub: Declaration of Local content

Tender Reference No: _____

Name of Tender: - _____

Country of Origin of Goods being offered: _____

We hereby declare that an item offered has % local content. _____

“Local Content” means the amount of value added in India which shall, be the total value of the item being offered minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

“*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.”

Yours faithfully,

(Signature of the Bidder, with Official Seal)