

UNIVERSITY OF CALICUT  
(PURCHASE DIVISION)

**NOTICE INVITING TENDER**

No.33315/PURCHASE-ASST-B1/2017/Admn

Calicut University (P.O.)

01.03.2017

The Registrar, University of Calicut invites online tender for the purchase of **Atomic Force Microscope (AFM)** for Central Sophisticated Instrumentation Facility (CSIF). **Rate quoted should be inclusive of taxes and all other charges. The bidders should remit 0.15% of the estimated cost plus VAT @5% as the cost of tender rounded to the nearest multiple of 100 , subject to a maximum of Rs.25,000/- plus VAT @5%. EMD @1% (rounded to the nearest rupees) of the total cost of the articles tendered for should be remitted subject to a minimum of Rs.1,500/-.**

**Detailed technical specifications (including catalogues and other details if any) should be uploaded under the heading Other Important Documents.** A Performance Security equivalent to 5% of the total value of the contract rounded to the nearest rupee should be submitted by the successful bidder for a contract value above Rs.1,00,000/-. The EMD and Performance Security are returnable.

Last date of receipt of documents submitted online **is 23.03.2017 at 06.00 P.M.** Pre bid meeting will be conducted on **10.03.2017 12. Noon** Hard copies (Technical Bid) of the documents must be submitted to the Deputy Registrar, Purchase Division, University of Calicut on or before **27.03.2017. 5 P.M.**

Tender documents and tender schedule may be downloaded free of cost from the Website [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in)

All bid/tender documents are to be submitted online only and in the designated cover(s)/envelope(s) on the website. Tenders/Bids shall be accepted only through online mode on the website and no manual submission of the same shall be entertained. Late tenders will not be accepted.

Further details can be had from the **Deputy Registrar, Purchase Division, University of Calicut, Calicut University (P.O), Malappuram, Pin.673 635, Kerala** during working hours. (0494 – 2407130, 2407160).

**Atomic Force Microscope (AFM)**

**Technical Specifications**

- The AFM must have a sample-scanning design, maintaining the XY and Z position of the tip constant with respect to the laser and photo-detector position at all times.
- The AFM must have a system height noise better than 35 pm RMS, in typical imaging bandwidth.
- The Engage mechanism must be automated, vertical, and fully software controlled.
- The AFM must include top-view optics, with an unobstructed optical path between optics and AFM tip.

**Scanner**

- Scanner must have a minimum XY range of 90 µm, and Z range of 5.5 µm or better.

- All scanners must support all operating modes, without exception.
- The scanners must have a piezo tube design.

## Controller

- The system must provide the capability to calibrate the cantilever spring constant by thermal tuning of the cantilever by sampling frequencies up to 2 MHz.
- The system must support High pixel density images up to 4k x 4k data points or above for 8 channels.
- The system must allow for up to 8 simultaneous channels in real time scanning.
- The system must include 3 inbuilt independent digital lock-in amplifiers, integrated into the AFM controller.
- The lock-ins must be software controlled, including control of the lock-in bandwidth, routing of input signal, routing of output signals.
- The controller must provide three independent digital to analog converters (DACs) per axis (X, Y & Z) i.e., 9 in total.
- The controller must allow user I/O through a Virtual Signal Access Module.
- The controller must support a handheld device for precise force control and Z positioning. This device must include visual (LED) & haptic (force) feedback, and can be an optional item.
- The controller must include digital active control of the cantilever quality factor Q (Q control).
- It must be possible – by software control – to ground or apply a voltage to both the tip and sample independently.

## Modes

- System must include a general purpose imaging mode with all of the following features: 1) Automatic optimization of critical imaging parameters including setpoint, gains, scan rate and Z limit; 2) Mode must operate in both air and liquids; 3) Does not require that the cantilever resonance be “tuned”; 4) Has conventional imaging rates (<10 minutes per image); 5) Directly controls the tip-sample imaging force down to at least 50 pN; 6) Mode automatically compensates for drift of the deflection signal
- The system must include the following operating modes (in air and liquids): Contact Mode, Tapping Mode, Phase Imaging, Lateral Force Microscopy (LFM), Force Spectroscopy, Force Modulation, Electric Field Microscopy (EFM), Piezoresponse Force Microscopy (PFM), Surface Potential Microscopy (KPFM), Magnetic Force Microscopy (MFM).
- The system must be able to do Fast Scanning using Micro actuated Probes and Nested Feedback Loop.
- The system must include the Force Volume imaging mode: using triggered force-curves in every pixel to create a topography and 3D force map.
- The system must provide the ability to perform a mode in which the topography is determined on the first pass over a scan line and a second parameter (such as the Magnetic Field) is determined on the second pass. The second pass should use the topography information from the first pass to maintain a constant tip-sample separation.

It must be possible to upgrade the system with the following:

1. Conductive AFM with a resolution of approximately 2 pico-amps and low current STM.

2. The system must support Scanning Tunneling Microscope (STM) with current gain of 10nA/V.
3. Sample temperature control; covering the range of -35<sup>0</sup>C up to 250<sup>0</sup>C, and including a dedicated tip heater element.
4. Liquid cell and cantilever holder for scanning in fluids
5. an imaging mode that unambiguously maps quantitative nanomechanical properties, including modulus and adhesion, at high resolution (<10nm), at conventional AFM imaging rates (<10 minutes per image), and over a wide modulus range (at least 1 MPa to 50 GPa). Conventional nanoindentation, higher harmonics imaging, and Dual/multi-frequency AC imaging modes are not acceptable substitutes.

Essential items to be included:

1. Computer with Intel iCore processor with with suitable genuine operating system, 30-inch monitor, and integrated video capture board for display of on-axis microscope camera on PC monitor. Software for data acquisition and to support image analysis in real-time.
2. Vibration Isolation Platform: ½ Hz passive vibration isolator capable of loads up to 57 lbs
3. Tools and accessories kit
4. Probes for Contact, Tapping / Non-contact, MFM and EFM
5. Operation Manual

**The complete AFM system must include 3 year comprehensive warranty and AMC for the 4<sup>th</sup> and 5<sup>th</sup> Year**

#### **General Conditions:**

1. No tender received after the specified date and time will be accepted on any account. The rates will be considered firm for acceptance till the date mentioned above. Tenders not stipulating period of firmness and tenders with price variation clause and/or 'subject to prior sale' condition are liable to be rejected.
2. The tenders will be opened on the appointed day and time in the office of the undersigned.
3. If any tenderer withdraws from his tender before the expiry of the period fixed keeping the rates firm for acceptance, the earnest money if any, deposited by him forfeited to University or such action taken against him as University think fit.
4. The final acceptance of the tenders rests entirely with the University who do not bind themselves to accept the lowest or any tender. But the tenderers on their part should be prepared to carry out such portion of the supplies included in their tenders as may be allotted to them.
5. Communication of acceptance of the tender normally constitute a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfillment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out in para below
6. (a) The successful tenderer shall before signing the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 5 percent of the value of the

contract as security for the satisfactory fulfillment of the contract less the amount of money deposited by him along with his tender. The amount of security may be deposited in the manner prescribed in Store Purchase Manual (Revised Edition 2013) Government of Kerala. Letters of guarantee in the prescribed form for the amount of security from an approved bank will be considered enough at the discretion of the University. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to the University and contract arranged elsewhere at the defaulter's risk and any loss incurred by University on account of the Purchase will be recovered from the defaulters who will however not be entitled to any gain accruing thereby. If the defaulting Firm is a registered firm their registration is liable to be cancelled.

(b) In cases where a successful tenderer, after having made partial supplies fails to fulfill the contracts in full, all, or any of the materials not supplied may at the discretion of the Purchasing Officer, be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already and the loss, if any caused to the University shall thereby together with such sums as may be fixed by the University towards damages be recovered from the defaulting tenderer.

(c) Even in cases where no alternate purchases are arranged for the materials not supplied, the proportionate portion of the security deposit based on the cost of the materials not supplied at the rate shown in the tender of the defaulter shall be forfeited and balance alone shall be refunded.

7. No interest will be paid on earnest money deposited.

8. The security deposit shall, subject to the conditions specified herein, be returned to the contractor within three months after the expiration of the contract, but in the event of any dispute arising between the Department concerned and the contractor, the Department shall be entitled to deduct out of the deposits or the balance thereof until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from University to the contractor. In all cases deposit will be released only after the expiry of the guarantee period.

9. (a) All payments to the contractors will be made by Purchasing Officer in due course: (i) either by Departmental cheques payable at the Kerala Government Treasuries or (ii) by cheques or drafts on the Reserve Bank of India, State Bank of India and State Bank of Travancore ( at any of their Principal Branches in India) (iii) in the case of supplies from abroad by drafts as may be arranged between the contracting parties.

(b) All incidental expenses incurred by the University for making payments outside the district in which the claim arises shall be borne by the contractor.

10. Bank charges incurred in connection with payment against documents through Bank will be to the account of the contractor. The firms will produce stamped pre receipted invoices in all cases where payments (advance/final/for the release of railway receipts/shipping documents) are made through banks.

11. The contractor shall not assign or make over the contract or the benefits or burdens thereof to any other person or body corporate. The contractor shall not under let or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the Purchasing Officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is

being executed and no allowance or compensation shall be made to the contractor or the sub-contractor upon such rescission. Provided always that if such consent be given at any time the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

12. In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business of the contract under inspection on behalf of or his creditors, or in case any receiving order or orders for the which under any clause or clauses of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the Contractor be determined and the University may complete the contract in such time and manner and by such persons as the University shall think fit. But such determination of the contract shall be without non prejudice to any right or remedy of the University against the contractor or his sureties in respect of any breach of contract therefore committed by the contractor. All expenses and damages caused to University by any breach of contract by the contractor shall be paid by the contractor to University, and may be recovered from him under the provisions of the Revenue Recovery Act in force in state.

13. a) In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements here in contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for University (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere or on behalf of the University by an order in writing under the hand of the Purchasing Officer put an end to this contract and in case the University shall have incurred, sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses of other moneys shall then or any time during the continuance of this contract be payable by the contractor to the University under and by virtue of this contract, it shall be lawful for the University from and out of any moneys for the time being payable or owing to the contractor from the University under by virtue of this contract or otherwise to pay and reimburse to the University all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase, made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price compensation, loss costs, damages, expenses and other money shall for the time being be payable by the contractor aforesaid.

b) In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court with in whose jurisdiction the purchasing officer voluntarily resides.

14. Every notice hereby required or authorized to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or maybe handed over to his agent personally, e-mailed or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted , shall be deemed to have been served on the contractor on the date on which, in the ordinary course of post, a letter so addressed and posted/e-mailed would reach his place of abode or business.

15. The tenderer shall undertake to supply materials according to the standard sample and /or specifications.

16. No representation for enhancement of rates will be considered.

17. Any attempt on the part of the tenderers or their agents to influence the Department/stores Purchase Department in their favour by personal canvassing with the officers concerned will disqualify the tenderers.

18. The prices quoted should be inclusive of all taxes, duties, cesses, etc., which are or may become payable by the Contractor under the existing or future laws or rules of the country of origin/supply or delivery during the course of execution of the contract.

19. Special Conditions, if any of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.

**Online Payment modes:** The tender document fees can be paid in the following manner through e-Payment:

- i. **State Bank of Travancore (SBT) Internet Banking:** If a bidder has a SBT internet banking account, then, during the online bid submission process, bidder shall select SBT option and then select Internet banking option. The e-Procurement system will re-direct the bidder to SBT's internet banking page where he can enter his internet banking credentials and transfer the tender document amount.
- ii. **National Electronic Fund Transfer (NEFT):** If a bidder holds bank account in a different bank, then, during the online bid submission process, bidder shall select NEFT option. An online remittance form would be generated, which the bidder can use for transferring amount through NEFT either by using internet banking of his bank or visiting nearest branch of his bank. After obtaining the successful transaction receipt no., the bidder has to update the same in e Procurement system for completing the process of bid submission. Bidder should only use the details given in the Remittance form for making a NEFT payment otherwise payment would result in failure in e- Procurement system.

**As NEFT payment status confirmation is not received by e-Procurement system on a real time basis, bidders are advised to exercise NEFT mode of payment option at least 48 hours prior to the last date and time of bid submission to avoid any payment issues. NEFT payment should be done according to following guidelines:**

- i. **Single transaction for remitting Tender document fee and EMD:** Bidder should ensure that tender document fees and EMD are remitted as one single transaction.
- ii. **Account number as per Remittance Form only:** Account no. entered during NEFT remittance at any bank counter or during adding beneficiary account in Internet banking site should be the same as it appears in the remittance form generated for that particular bid by the e-Procurement system. Bidder should ensure that tender document fees and EMD are remitted only to the account number given in the Remittance form provided by e-Procurement system for that particular tender. Bidders must ensure that the banker inputs the Account Number (which is case sensitive) as displayed in the Remittance form. No additional information like bidder name, company name, etc. should be entered in the account no. column along with account no. for NEFT remittance.
- iii. **Only NEFT Remittance Allowed:** RTGS payments, Account to Account transfers, State Bank Group Transfers (GRPT) or Cash payments are not allowed and are treated as invalid mode of payments. Bidder must ensure that the banker does NEFT transaction only

irrespective of the amount and specially instruct the banks not to convert the payment type to RTGS or GRPT.

iv. **Amount as per Remittance form:** Bidder should ensure that the amount being remitted is neither less nor higher than the amount shown in remittance form.

v. **UTR Number:** Bidders should ensure that the remittance confirmation (UTR number) received after NEFT transfer should be updated as it is, in the e-Procurement system for tracking the payment.

vi. **One Remittance Form per Bidder and per Bid:** The remittance form provided by e-Procurement system shall be valid for that particular bidder and bid and should not be re-used for any other tender or bid or by any other bidder.

Any transaction charges levied while using any of the above modes of online payment has be borne by the bidder. **The supplier/contractor's bid will be evaluated only if payment status against bidder is showing "Success" during bid opening**

**REGISTRAR**

UNIVERSITY OF CALICUT

MALAPPURAM, KERALA STATE