

UNIVERSITY OF DELHI

Delhi-110007



Ferroelectric Characterization unit

e-Tender Document

Vinay Gupta
"DRDO Project
Fabrication of Lamb-wave devices
on SiC for strategic applications"

E-procurement Tender Notice

Ref.No.:DU/DRDO/FCU/02

Date: 15-04-2019

Tenders containing technical and commercial bids are invited under e-procurement scheme for the following item as per the specifications given in Annexure B. Your quotation should be submitted latest by 2.00 p.m. on 6th May 2019.

S.No.	Description of items	Qty.
1.	Ferroelectric Characterization unit	01

Important Information:

(i) All details regarding the subject tender are available on our websites www.du.ac.in and <https://eprocure.gov.in/eprocure/app>. Bidders are therefore, requested to visit the mentioned websites regularly to keep themselves updated.

Tender Type	Open
Product Category	Goods
Tender Fee	NIL
EMD Amount	5,00,000
Bid Validity Duration	120 Days
Completion Period	120 Days
Bid Document Download start Date:	15-04-2019, 2:00 p.m.
Bid Submission start date	15-04-2019, 2:00 p.m.
Bid Submission end date	6-05-2019, 2:00 p.m.
Bid Opening Date	07-05-2019, 10:00 a.m.

(ii) **Manual bids shall not be accepted.**

(iii) The quantity of items ordered may vary.

(iii) For submission of E-Bids, bidders are required to get themselves registered with <http://eprocure.gov.in/eprocure/app>.

(iv) Clarifications/ queries, if any, can be addressed to Prof. Vinay Gupta, PI, Department of Physics and Astrophysics, University of Delhi, via phone no. +91-981563101 and email: drguptavinay@gmail.com

Thanking you,

Sincerely yours

Vinay Gupta

Information and Instruction for Bidders

1. Vendors may be invited for presentation and clarification to the technical evaluation committee on short notice.

2. BID SUBMISSION

The instructions for Online bid submission are available in Annexure A

Bids shall be submitted online only at CPP portal: <https://eprocure.gov.in/eprocure/app>.

Tenderer/contractor are advised to follow the instructions provided in the 'Instructions to the Contractor/Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e-procurement at <https://eprocure.gov.in/eprocure/app>.

Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

Tenderer who has downloaded the tender from the University website www.du.ac.in and Central Public Procurement Portal (CPPP) <https://eprocure.gov.in/eprocure/app>, shall not tamper/modify the tender form including downloaded price bid template in any manner. In case if the same is found to be tempered/modified in any manner, tender will be completely rejected and tenderer is liable to be banned from doing business with Delhi University.

Intending tenderers are advised to visit again University website www.du.ac.in and CPP Portal <https://eprocure.gov.in/eprocure/app> at least 3 days prior to closing date of submission of tender for any corrigendum / addendum/ amendment.

Instructions for Technical bid submission (As per Annexure B):

- (a) Quotation should be directly from Original manufacturer or authorized sales agent.
- (b) Sole agency certificate (if applicable) and its validity from Foreign Principals (in case of foreign manufacturer).
- (c) Pre-installation requirements such as electrical load requirement, etc. must be specified.
- (d) Any optional equipment/accessory advised for better functioning of equipment must be specified and quoted separately.
- (e) Details on installation, commissioning and **training of the equipment** must be specified.
- (f) State **service-support** for the equipment in India, specifically in Delhi/NCR, give details of service-centres with address, telephone numbers and name of service engineers available, **response time** during warranty and afterwards.
- (g) **Certificate of compliance** with deviations from specification (if any) must be attached.
- (h) **Original brochures and original specification sheets (from equipment manuals)** directly obtained from the principal manufacturer of the quoted model must be enclosed **along with supporting data**.
- (i) List of customers to be provided.
- (j) Vendor must submit **Earnest Money Deposit (EMD)** for an amount of Rs. **5,00,000/- (Rs. Five lakh only)** in the form of Bank Guarantee in favor of "The Registrar, University of Delhi, Delhi" for the quoted item separately.

The non-submission of EMD will lead to the rejection of the bid. The irrevocable Bank Guarantee drawn on a Scheduled bank, shall be in the form acceptable to the University of Delhi as per **Annexure B**. The EMD shall remain valid for a period of 60 days beyond the final bid validity period. The EMD of unsuccessful bidders will be returned to them within 30 days after the award of the contract. The successful bid, if withdrawn, is liable for forfeiture of the EMD.

(k) **Performance Bank Guarantee:** 10% of total purchase order value with validity up to 60 days after completion of warranty period must be submitted within 30 days from the date of purchase order.

(l) Institute reserves the right to order equipment with better quality over lower price and to accept or reject any or all the quotations without assigning reasons thereof.

Instructions for Financial Bid submission (as per Annexure C):

(a) Prices must be quoted on both FOB and FOR (Delhi) basis. All charges including all taxes should be clearly indicated.

(b) Guarantee or warranty conditions must be clearly specified. The amount for AMC should be mentioned separately.

(c) Validity of quotation must be at least 6 months from the date of quotation.

(d) Mode of payment is through Wire transfer/LC for foreign purchases. Name and address of the company on whose name the LC is to be opened should be clearly mentioned.

(e) Supplier must submit TIN number/PAN number as applicable.

3. FINAL DECISION MAKING AUTHORITY

The University reserves the right to accept or reject any bid and to annul the process and reject all bids at any time, without assigning any reason or incurring any liability to the bidders. No claim whatsoever will be entertained/paid by the university to the bidder(s).

4. AMENDMENT OF TENDER DOCUMENT:

Before the deadline for submission of tender, the University may modify the tender document by issuing addendum/corrigendum. Any addendum/corrigendum thus issued shall be a part of the tender document and shall be uploaded on the University website (www.du.ac.in) and CPP portal <https://eprocure.gov.in/eprocure/app>. Prospective bidders must visit the website before filling and submission of Tender Document for such information.

5. ARBITRATION AND SETTLEMENT OF DISPUTES:

In the event of any question, dispute or difference arising under this agreement or in connection therewith (except as to matter the decision of which is specifically provided under this agreement), the same shall be referred to sole arbitration of the Registrar or any other person as approved by the Vice-Chancellor, University of Delhi. There will be no objection for any such appointment on the found that the arbitrator is an Employee of University of Delhi or that he/she has to deal with the matter to which the agreement relates or that in course of his/her duties as University of Delhi Employee he/she has express views on all or any of the matter under dispute. The award of the arbitrator shall be final and binding on the parties.

The arbitrator may from time to time with the consent of parties change the time for making and publishing the award. Subject to India Arbitration and Conciliation Act 1996 and the Rules made there under, any modification thereof for the time being in force shall be deemed to apply to the arbitration proceeding under this clause.

INSTRUCTIONS FOR ONLINE BID SUBMISSION

The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at: <https://eprocure.gov.in/eprocure/app>.

REGISTRATION

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>) by clicking on the link **“Online bidder Enrolment”** on the CPP Portal which is free of charge.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / nCode / eMudhra etc.), with their profile.
- 5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- 6) Bidder then logs in to the site through the secured log-in by entering their user ID / password and the password of the DSC / e-Token.

SEARCHING FOR TENDER DOCUMENTS

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, Organization Name, Location, Date, Value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as Organization Name, Form of Contract, Location, Date, Other keywords etc. to search for a tender published on the CPP Portal.
- 2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- 3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF/JPG formats. Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.

4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Space" or "Other Important Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Space" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

1) Bidder should log into the site well in advance for bid submission so that they can upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.

2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.

3) Bidder has to select the payment option as "offline" to pay the tender fee / EMD as applicable and enter details of the instrument.

4) Bidder should prepare the EMD as per the instructions specified in the tender document. The last date of bid submission or as specified in the tender documents. The details of the DD/any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.

5) Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BoQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BoQ file, open it and complete the white coloured (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BoQ file is found to be modified by the bidder, the bid will be rejected.

6) The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.

7) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.

8) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.

9) Upon the successful and timely submission of bids (ie after Clicking "Freeze Bid Submission" in the portal), the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.

10) The bid summary has to be printed and kept as an acknowledgement of the submission of the bid. This acknowledgement may be used as an entry pass for any bid opening meetings.

ASSISTANCE TO BIDDERS

1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.

2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

TECHNICAL BID

1. Name of the Company _____
2. Address (with Tele No. fax No. & E-mail) _____
3. Contact person Name and mobile number _____
4. (a) The number of years of experience in dealing with software business _____
- (b) Total value per year of Business during the last three years _____
(Attested certificate from Chartered Accountant should be attached.)
5. (a) Registration Number _____
VAT number _____
- (b) PAN Number _____
- (c) Service Tax Number _____
6. Technical details of Ferroelectric Characterization Unit (FCU) as per details given below:

Specifications of Ferroelectric Characterization Unit (FCU)**Basic System**

User friendly software library having capability to perform th following functions:

1. Testing of non-linear properties of the non-linear materials.
2. The software should communicate well with the digital, analog and microprocessor circuits surrounding the non-linear components for a specific measurement.
3. The software should be capable of performing the direct electrical, piezoelectric, pyroelectric and magnetoelectric analysis of the non-linear test sample without disturbing the circuitry.
4. It should be capable of controlling the thermal, atmospheric, magnetic environment around the system from within a test definition using ovens, cryogenic chambers, vibrating sample magnetometers, or magnetic coils. It should be capable of providing sufficiently large signal to noise ratio.
5. The software should support the fatigue studies for at least 24 hrs on the sample wrt the electrical, piezoelectric, pyroelectric and magnetoelectric analysis of the non-linear test sample.

Technical Specifications:

S. No	Parameter	Specifications
Ferroelectric Characterization Unit (FCU)		
1.	Maximum input voltage applied to the test system	± 200V expandable to 10kV
2.	Frequency of the applied input voltage	upto 270kHz
3.	A/D Converters	18-bit Resolution
4.	Arbitrary Waveform Generator output	16-bit
5.	Accuracy	0.5% or Better
6.	Maximum Data Points	32,000 at a speed ≤ 2MHz or ≥ 30 mHz

7.	Minimum Pulse Widths	$\leq 0.5\mu\text{s}$
8.	Maximum Pulse Widths	$\geq 1\text{s}$
9.	Other important parameters	<ul style="list-style-type: none"> • Vision controlled output ramp for maximum accuracy • Five measurement channels for charge and voltage that are synchronized to within 5 ns of each other to prevent measurement distortion due to time skew between channels. • Measurement of charge using electrometer • Embedded safety interlocks • $0.5\mu\text{s}$ capture rate with $0.1\mu\text{s}$ interface facility • 15 Out \times 8 In/Out parallel digital ports for setting, controlling, and reading digital IC's or communicating with microprocessors (how this no is set? Why not using microcontroller?) • Arbitrary I²C custom programmable I/O for communicating with I²C capable microprocessors and logic circuits.
10.	Built in LCR impedance measurement port with Frequency Range or higher Impedance Range	1 kHz to 100 kHz or 100 Ω up to 100 k Ω or higher
11.	Voltage measurement asynchronous port	16-bit, $\pm 10\text{V}$, $10^{12}\Omega$ input-impedance
12.	Independent DC bias generator	$\pm 10\text{V}$ 25mA
13.	Frequency counter for measuring oscillator circuits	upto 60 MHz or higher frequencies

Optional Items

I. Magnetolectric Measurement for thin films

- ME Shield Box should block external EMF allowing resolution down to 0.5 pC at 1 Hz
- Three Current sources ($\geq 2.5\text{A}$) to control a Helmholtz coil and two DC coils simultaneously or independently
- Hall Effect Sensor on the tip of the mother board near the sample
- Bult-in software for measuring the Magneto-Electric coefficient

II. Piezoelectric Measurement for thin films:

- Determines the Piezoelectric coefficients for piezoelectric thin films with 2% reload uniformity on 5mm x 72mm cantilevers.
- It should have built-in Test Fixture for thin Film Samples and photonic sensor for displacement measurements.
- Displacement sensor

III. Thin Film Probe Station (both DC and low frequency RF):

- 4" Stainless Steel Vacuum Chuck. The chuck should have the capability of holding samples of any shape and size upto 4".
- Vacuum Rings x1 for wafer 2" and single die
- Side Driven Chuck Stage X-Y 3"x3"

a) Optics Package-

- E.P. 20x or more
- Zoom 1x to 5x
- Total Magnification 20x to 100x
- For target 20 μ m x 20 μ m and larger

b) Digital Camera-

- LEDs White (8)
- Magnification Range 10x to 140x
- Megapixel: 5 MP or better
- Resolution: 2592 \times 1944 pixels or better
- Frame Rate : maximum 30 FPS

c) Probe Positioners Left and Right

- Linear XYZ travel (12mm x12mm x 12mm)
- 40 Thread/Inch
- Stainless Steel Lead Screw
- Magnetic Base
- Right Hand and Left-Hand Use

d) Tip Holders Left and Right

- Spring Type Tip Holder
- Coaxial cable 1.5 m long terminated with BNC male
- Tungsten Tip – 0.5 μ m diameter (6 tips)

Annexure B

Format for submitting the EMD

(Note: This EMD bank guarantee certificate should be prepared by the vendor on a non judicial stamp paper of Rs. 100/-)

Earnest Money Deposit Bank Guarantee

To
The Registrar
University of Delhi
Delhi-110007

Dear Sir,

Supply & Installation of "Quotations for Item: -----(give Tender Reference No.)

WHEREAS

The University of Delhi located at Delhi (hereinafter called the University) has invited tenders for the Supply & Installation of "....." on the terms and conditions mentioned in the tender document.

1. It is one of the terms of invitation of tenders that the tenderer shall furnish a Bank Guarantee as detailed in the tender document Clause 6 as Earnest Money Deposit.

2. M/s _____, (hereinafter called as Tenderer), who are our constituents intend to submit their tender for the said equipments and have requested us to furnish guarantee to the 'University' in respect of the said sum of Rs. -----/ (Rupees----- only)

NOW THIS GUARANTEE WITNESSETH

1. We _____ (NAME OF THE BANK) do hereby agree with and undertake to the University of Delhi, their Successors. Assigns that in the event of the University of Delhi coming to the conclusion that the Tenderer have not performed their obligations under the said conditions of the tender or have committed a breach thereof, which conclusion shall be binding on us as well as the said Tenderer, we shall on demand by the University of Delhi, pay without demur to the University of Delhi, a sum of Rs. -----/(Rupees -----only) or any lower amount that may be demanded by the University of Delhi. Our guarantee shall be treated as equivalent to the Earnest Money Deposit for the due performance of the obligations of the Tenderer under the said Conditions, provided, however, that our liability against such sum shall not exceed the sum of Rs. -----/(Rupees ----- only).

2. We also agree to undertake to and confirm that the sum not exceeding Rs. -----/(Rupees -----only) as aforesaid shall be paid by us without any demur or protest, merely on demand from the University of Delhi on receipt of a notice in writing stating the amount is due to them and we shall not ask for any further proof or evidence and the notice from the University of Delhi shall be conclusive and binding on us and shall not be questioned by us in any respect or manner whatsoever.

We undertake to pay the amount claimed by the University of Delhi within a period of one week from the date of receipt of the notice as aforesaid.

3. We confirm that our obligation to the University of Delhi under this guarantee shall be independent of the agreement or agreements or other understandings between the University of Delhi and the Tenderer. **This guarantee shall not be revoked by us without prior consent in writing of the University of Delhi. We hereby further agree that**

Any forbearance or commission on the part of the University of Delhi in enforcing the conditions of the said agreement or in compliance with any of the terms and conditions stipulated in the said tender and/or hereunder or granting of any time or showing of any indulgence by the University of Delhi to the Tenderer or any other matters in connection therewith shall not discharge us in any way our obligation under this guarantee. This guarantee shall be discharged only by the performance by the Tenderers of their obligations and in the event of their failure to do so, by payment by us of the sum not exceeding Rs. ----- (Rupees -----only) ·Our liability under these presents shall not exceed the sum of Rs. ----- (Rupees -----only)·Our liability under this agreement shall not be affected by any infirmity or irregularity on the part of our said constituents in tendering for the said work or their obligations there under or by dissolution or change in the constitution of our said constituents. · This guarantee shall remain in force up toprovided that if so desired by the University of Delhi, this guarantee shall be renewed for a further period as may be indicated by them on the same terms and conditions as contained herein. ·Our liability under this presents will terminate unless these presents are renewed as provided hereinabove on theor on the day when our said constituents comply with their obligations, as to which a certificate in writing by the University of Delhi alone is the conclusive proof whichever date is later. Unless a claim or suit or action is filed against us within six months from that date or any extended period, all the rights of the University of Delhi against us under this guarantee shall be forfeited and we shall be released and discharged from all our obligations and liabilities hereunder.

Yours' faithfully,
For and on behalf of _____ Bank Authorized official

(Note: This guarantee will require stamp duty as applicable and shall be signed by the official whose signature and authority shall be verified).

Annexure C

FINANCIAL BID

S.no.	Description of Items	Quantity	Unit Cost	Total Cost
1.	Ferroelectric Characterization Unit (FCU)	01		
Taxes (applicable if any) CIP New Delhi including Air Freight & FOR University of Delhi, Delhi				

Authorized signatory
With Seal of Company

TENDER ACCEPTANCE LETTER
(To be given on Company Letter Head)

To,

Sub: Acceptance of Terms & Condition of Tender.

Tender Reference No: _____

Name of Tender / Work:-

Dear Sir,

1. I/We have downloaded/obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely:

As per your advertisement, given in the above mentioned website(s).

2. I/We hereby certify that I/we have read the entire terms and conditions of the tender documents from Page No. ____ to ____ (including all documents like annexure(s), schedule(s), etc.), which form part of the contract agreement and I/we shall abide hereby by the terms / conditions/ clauses contained therein.

3. The corrigendum(s) issued from time to time by your department / organization too has also been taken into consideration, while submitting this acceptance letter.

4. I/we hereby unconditionally accept the tender conditions of above mentioned tender document(s)/corrigendum(s) in its totality/entirely.

5. I/we do hereby declare that our firm has not been blacklisted/debarred by any Govt. Department/Public Sector undertaking.

6. I/we certify that all information furnished by the our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/organization shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract. without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

Yours faithfully,

(Signature of the Bidder, with Official Seal)

