Government eProcurement System

eProcurement System Government of India

Tender Details

Date : 04-May-2023 03:34 PM

Print

Basic Details

Organisation Chain	Institute of Nano Science and Technolgy - Mohali		
Tender Reference Number	INST/12(350)/2021-Pur		
Tender ID	2023_INST_751856_1		
Tender Type	Open Tender	**Form of contract**	Supply
Tender Category	Goods	**No. of Covers**	2
General Technical Evaluation Allowed	No	**ItemWise Technical Evaluation Allowed**	No
Payment Mode	Offline	**Is Multi Currency Allowed For BOQ**	No
Is Multi Currency Allowed For Fee	No	**Allow Two Stage Bidding**	No

Payment Instruments

Offline	S.No	Instrument Type
	1	Direct Credit
	2	R-T-G-S
	3	NEFT

Cover Details, No. Of Covers - 2

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock
2	Finance	.xls	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock

Tender Fee Details, [Total Fee in ₹ * - 590]

Tender Fee in ₹	590		
Fee Payable To	Director INST	**Fee Payable At**	Mohali
Tender Fee Exemption Allowed	Yes		

EMD Fee Details

EMD Amount in ₹	11,75,000	**EMD through BG/ST or EMD Exemption Allowed**	Yes
EMD Fee Type	fixed	**EMD Percentage**	NA
EMD Payable To	Director INST	**EMD Payable At**	Mohali

Click to view modification history

Work /Item(s)

Title	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock
Work Description	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock
	Please refer Tender documents.

Pre Qualification Details					
Independent External Monitor/Remarks	NA				
Show Tender Value in Public Domain	No				
Tender Value in ₹	0.00	**Product Category**	Miscellaneous Goods	**Sub category**	NA
Contract Type	Tender	**Bid Validity(Days)**	120	**Period Of Work (Days)**	30
Location	INST Mohali	**Pincode**	140306	**Pre Bid Meeting Place**	INST MOHALI
Pre Bid Meeting Address	INST MOHALI	**Pre Bid Meeting Date**	12-May-2023 10:30 AM	**Bid Opening Place**	INST MOHALI
Should Allow NDA Tender	No	**Allow Preferential Bidder**	No		

Critical Dates

Publish Date	04-May-2023 03:45 PM	**Bid Opening Date**	26-May-2023 03:00 PM
Document Download / Sale Start Date	04-May-2023 04:00 PM	**Document Download / Sale End Date**	25-May-2023 02:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA
Bid Submission Start Date	04-May-2023 05:00 PM	**Bid Submission End Date**	25-May-2023 02:00 PM

Tender Documents

NIT Document

S.No	Document Name	Description	Document Size (in KB)
1	Tendernotice_1.pdf	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock	913.36

Work Item Documents

S.No	Document Type	Document Name	Description	Document Size (in KB)
1	BOQ	BOQ_790467.xls	Supply of Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock	279.00

Auto Extension Corrigendum Properties for Tender

Iteration	No. of bids required for bid opening a tender	Tender gets extended to No. of days
1.	3	7

Bid Openers List

S.No	Bid Opener Login Id	Bid Opener Name	Certificate Name
1.	vibha.mehta@inst.ac.in	Vibha Mehta	Vibha Mehta
2.	nimesh@inst.ac.in	Nimesh Kaushik	Nimesh Kaushik
3.	mukeshraja@inst.ac.in	Mukesh Raja	Mukesh Raja

GeMARPTS Details

GeMARPTS ID	OQIAXP778JCU
Description	Not available on Gem
Report Initiated On	04-May-2023
Valid Until	03-Jun-2023

Tender Properties

	No	**Show Technical bid status**	Yes

Auto Tendering Process allowed			
Show Finance bid status	Yes	**Show Bids Details**	Yes
BoQ Comparative Chart model	Normal	BoQ Compartive chart decimal places	2
BoQ Comparative Chart Rank Type	L	Form Based BoQ	No

Tender Inviting Authority	
Name	CFAO
Address	INST MOHALI

Tender Creator Details	
Created By	Vibha Mehta
Designation	Finance Officer
Created Date	04-May-2023 03:30 PM

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI
(An autonomous Research Institute of Department of Science and Technology, Government of India)
Knowledge City, Sector 81, Mohali – 140306, PUNJAB
Phone No: 0172 – 2297000
Website: www.inst.ac.in

F. No. INST/12(350)/2021-Pur Date: 03.05.2023

To

GLOBAL TENDER ENQUIRY

Online tenders are invited on behalf of the Director, INST Mohali in TWO BID SYSTEM for the Supply and installation of **"Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock"** as per technical specification and details given below and BOQ list from the original manufacturer/supplier at CPPP i. e. https://eprocure.gov.in/eprocure/app. Tender documents may please be downloaded from the E-procurement portal website https://eprocure.gov.in/eprocure/app & Institute website www.inst.ac.in.

Sd/-
Chief Finance and Administrative Officer

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INSTRUCTIONS

- The Quotation Should be addressed to the Director INST, Mohali.
- The Quantity mentioned in this inquiry shall be deemed to be only approximate and will not in any manner be binding on the Institute.
- Firms will quote separately for each article as per BOQ.
- The rates offered should be FOR Mohali in case of firms situated outside Chandigarh and free delivery at the Institute premises in case of local firms.
- GST: The Institute is not exempted from the payment of GST. The rate (i.e., percentage of taxes applicable should be clearly indicated, wherever chargeable.
- In case of Ex-godown terms the amount of packaging forwarding freight etc. should clearly be indicated by percentage or lump sum amount. Current rate of GST must be mentioned. The institute is exempted from Customs and Excise Duty.
- The delivery period should be specifically stated. Ex-Stock and earlier delivery may be preferred.
- The firms are requested to give detailed description and specifications together with the detailed drawings, printed leaflets and literature of the Article quoted.
- The name of the manufacturers and country of manufacture should also invariably be stated. In the absence of these particulars the quotation is liable for rejection.
- Quotation should have minimum validity of 120 days from the date of opening.
- The rates quoted should be for each item separately otherwise your quotation is liable to be ignored.
- Director has the right to reject to the quotations and to split up the requirements or change any or all the above conditions without assigning any reason.

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NOTICE INVITING GLOBAL TENDER ENQUIRY

INST invites online Global Tender Enquiry from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time for the instrument, as per specifications given in the Annexure attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the website (www.inst.ac.in) of the Institute.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, INST reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

EQUIPMENTS LIST

S. No.	Item Description	Qty.	Tender Fee	EMD
1	**Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock**	01	Rs. 590/- (Non-refundable)	Rs. 11,75,000/-

IMPORTANT NOTE, DATES & TIME	
Tender Publishing Date and time	4th May, 2023 (1200HRS)
Tender Document download start Date & Time	4th May, 2023 (1300HRS)
Date and Time of Pre-bid Meeting	12th May, 2023 (1030HRS)
Last Date & Time For Submission	25th May, 2023 (1400HRS)
Date / Time of Opening of Bids	26th May, 2023 (1500 HRS)
Venue of Bid Opening at INST	INST, Knowledge City, Sector 81, Mohali

Pre-Bid Meeting (PBM)

- The objective of PBM is to provide a platform for clarifying issues and clearing doubts, if any, about the specifications and other allied technical/commercial details of the bid document. Bidders are requested to submit their bids only after the PBM so as to take care of the changes made in the bidding document, if any.

- The prospective participants should inform their intention to participate and send written queries at the email: purchase@inst.ac.in positively up to 11th May, 2023 to enable us to keep the response ready. Queries after 12th May, 2023 upto 4.00PM will not be entertained.

- Change in the technical specifications and terms & conditions if any, for the above item after pre-bid deliberations, will be uploaded on the INST website & CPPP Website. All vendors are requested to quote accordingly.

Note: Non-receipt of EMD and Tender Fee will lead to rejection of tender.

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Instructions to bidders for submission of Bids

I. The e-tenders are being invited for Supply and installation of **"Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and Load Lock"** through e-procurement. All the instructions of e-procurement is applicable. Tender must be submitted through e-procurement website only. The bid received in physical mode shall not be considered at all. Detailed information regarding the items, application / tender forms, EMD details, specifications, terms and conditions can be downloaded from the following websites www.inst.ac.in or https://eprocure.gov.in/eprocure/app

II. The interested bidders shall submit their tender(s) both Technical bid and financial bid through online mode in https://eprocure.gov.in/eprocure/app. The bidders shall upload all the documents as per NIT for Bidders.

III. Any corrigendum to this tender will be notified through the aforesaid websites only. INST reserves the right to accept or reject any or all the bids without assigning any reason at any stage.

IV. The Bidder is expected to examine all instructions, eligibility criteria/pre-qualification criteria, forms, terms and conditions in the tender document. Failure to furnish complete information as required with reference to the tender document shall result in rejection of the bid.

V. Bidders have to submit a EMD and tender fee. Bids received without EMD and tender will not be considered and summarily rejected.

VI. Any attempt to negotiate directly or indirectly on the part of the Bidder with authority competent to finally accept the Tender or influence the acceptance of the tender by any means will result his tender excluded from consideration.

VII. Conditional tender, illegible and ambiguous tender, partially filled tender, incomplete tender and tender without enclosing required documents will be summarily rejected.

VIII. This office reserves the right to accept or reject any bid without assigning any reason at any time prior to award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligations to inform the affected bidder or bidders of the grounds for this Office's action.

IX. Tenderers are requested that, before quoting their rates or filling tender, the tender form may please be read out thoroughly (line by line), otherwise the Competent Authority of this office will not be held responsible for any error/oversight of his own.

X. Clarification regarding any ambiguity in eligibility criteria may be sought through e-mail at puchase@inst.ac.in.

XI. Bidder/s quoting in currency other than Indian Rupee (INR) should explicitly mention the currency in which tender quoted wherever applicable in Technical Bid along the tender documents.

XII. The online Price BOQ is in INR format. If bidder want to quote other than INR please specify the quoted currency in the technical bid/part and fill the amount in same BOQ.

XIII. Please bifurcate the price on shipping terms i, e, Ex-works -> FCA/FOB -> CIP/CIF in price BOQ and specify the same in technical bid without price.

XIV. Bidder should quote the equipment prices: CIP New Delhi.

REGISTRATION

1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL:http://eprocure.gov.in/eprocure/app) by clicking on the link "Click here to Enroll". Enrolment on the CPP Portal 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 / TCS / 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 DSCs to others which may lead to misuse.
6) Bidder then logs in to the site through the secured log-in by entering their userID / password and the password of the DSC / eToken.

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 formats. Bid documents may be scanned with 100 dpi with black and white option.
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" 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 he/she 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 the bid document and upload the required bid documents one by one as indicated in the tender document.
3) A standard BoQ format has been provided with the tender document to be filled by all the bidders. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. Bidders are required to download the BoQ file, open it and complete the white colored (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.
4) 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.
5) 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.
6) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
7) Upon the successful and timely submission of bids, 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.
8) Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

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. The contact number for the helpdesk is 1800 233 7315.

General Instructions to the Bidders

1) The tenders will be received online through portal http://eprocure.gov.in/eprocure/app .In the Technical Bids, the bidders are required to upload all the documents in .pdf format.

2) Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through https://eprocure.gov.in/eprocure/app. Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site https://eprocure.gov.in/eprocure/app under the link "Information about DSC".

3) Tenderer are advised to follow the instructions provided in the „Instructions to the Tenderer the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at https://eprocure.gov.in/eprocure/app.

TERMS AND CONDITIONS

Important Conditions of the tender to be abide by the tenderer

1. **Due date**: The tender has to be submitted before the due date. The offers received after the due date and time will not be considered.

2. **Opening of the tender**: The offer/bid will be opened by a committee duly constituted for this purpose.

3. **Acceptance/Rejection of bids:** The INST reserves the right to reject any or all offers without assigning any reason.

4. **Tender Fee/EMD**: Tender fee/EMD is to be obtained from the bidders except those who are registered with the Central Purchase Organisation, National Small Industries Corporation (NSIC) or the concerned Ministry or Department. The tenderer should submit Tender Fee/EMD amount as per tender ref. no. through NEFT/RTGS in INST Account. Account Details are as follows:
   - **a.** Name of Beneficiary: Institute of Nano Science and Technology (INST)
   - **b.** Account No. **2452201001102**
   - **c.** Name of Bank: **Canara Bank, Phase 10, Mohali**
   - **d.** IFS Code: **CNRB0002919**
   - **e.** MICR Code:**160015003**
   - **f.** Swift Code: **CNRBINBBFFC**

   The details of transaction for EMD/tender fee viz. Name of bidder firm, Tender Description, Transaction ID/No. of Transfer, Transaction date, Amount of Transaction, Name of Bank, Address of Bank shall be furnished by the tenderer on their letterhead separately along with their tender.

   EMD can be accepted in the form of RTGS/NEFT, Bank Guarantee, FDR

5. **Performance Security**: The supplier shall be required to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is equal to the 3% of Purchase value at the time of the installation of the equipment covering warranty period of the equipment and should be kept valid for a period of 60 days beyond the date of completion of warranty period.

6. **REASONABILITY OF PRICES** :
   Please quote best minimum prices applicable for a premier Research Institution, **leaving no scope for any further negotiations on prices. The quoting party should give a certificate to the effect**

that the quoted prices are the minimum and they have not quoted the same item on lesser rates than those being offered to INST to any other customer nor they will do so till the validity of offer or execution of the purchase order, whichever is later. We request you to fill the price reasonability certificate format in the enclosed file (Annexure "1")

The party must give details of identical or similar equipment, if any, supplied to any CSIR labs/DBT Institutes during last three years along with the final price paid and Performance certificate from them.

7. **Force Majeure:** The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

   - For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
   - If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

8. **Risk Purchase Clause**: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.

9. **Packing Instructions**: Each package will be marked on three sides with proper paint/indelible ink, the following:

   i. Item Nomenclature
   ii. Order/Contract No.
   iii. Country of Origin of Goods
   iv. Supplier's Name and Address
   v. Consignee details
   vi. Packing list reference number
   vii.

10. **Delivery of Goods:** Delivery should be given at **Institute of Nano Science and Technology, Knowledge City, Sector 81, Adjacent to IISER, Mohali - 140306, Punjab** within a maximum of 10 month's time from the date of opening of LC.

11. **Delayed delivery:** If the delivery is not made within the due date for any reason, INST will have the right to impose penalty @ 0.5% per week and the maximum deduction is 10% of the contract value / price.

12. **Prices**: The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated.
    The price should be quoted without custom duty and excise duty, since INST is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. **(Please refer Annexure – 2 for the price to be quoted).**

13. **Notices:** For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.

i. ***Purchaser:*** The Director,
Institute of Nano Science and Technology,
Knowledge City, Sector 81, Adjacent to IISER, Mohali – 140306, Punjab

ii. ***Supplier:*** (To be filled in by the supplier)
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.....
.....

14. **Resolution of Disputes**: The dispute resolution mechanism to be applied pursuant shall be as follows:
    i. In case of Dispute or difference arising between the Purchaser and the supplier relating to any matter arising out of or connected with this contract, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Institute of Nano Science and Technology (INST) Mohali and if he is unable or unwilling to act, to some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.

15. **Applicable Law:** The place of jurisdiction would be Mohali (Punjab) INDIA.

16. **Right to Use Defective Goods**
    If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

17. **Training**
    The Supplier is required to train the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.

18. **Installation & Demonstration**
    The supplier is required to do the installation and demonstration of the equipment within one month of the arrival of materials at the INST site of installation, otherwise the penalty clause will be the same as per the supply of materials.

19. **Warranty**: Two Years Warranty shall have to be provided by the firm. The Warranty should be comprehensive on site.

20. **Note: <u>If the OEM warranty is for 12 Months, additional extended warranty of 12 months should be quoted separately with or without price.</u>**
    (Optional: Bidder should quote for Warranty for 3rd year, 4th year and 5th year)

21. **Taxes and Duties**
    Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, GST in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.

22. **PAYMENT:** The payment shall be made to bidder through the letter of credit. LC will be established through our banker, only after receipt of your order acceptance/acknowledgement with its terms and

conditions. L/C will be established for 100% Value (80% of the amount shall be released on presentation of complete and clear shipping documents and 20% of the amount shall be released after the installation and the demonstration of the equipment.

23. **User list:** Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided.

24. **Manuals and Drawings**

- Before the goods and equipments are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.
- The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.
- Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.

25. **Site Preparation**: The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.
The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.

26. **Acknowledgement**: It is hereby acknowledged that we have gone through all the conditions mentioned above and we agree to abide by them.

SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE COMPANY WITH DATE

Code of Integrity in Public Procurement; Misdemeanours and Penalties

1.1 Code of Integrity

Procuring authorities as well as bidders, suppliers, contractors, and consultants - should observe the highest standard of ethics and should not indulge in following prohibited practices, either directly or indirectly, at any stage during the Tender Process or during the execution of resultant contracts:

1) **"Corrupt practice"** - making offer, solicitation or acceptance of a bribe, reward or gift or any material benefit, in exchange for an unfair advantage in the Tender Process or to otherwise influence the Tender Process;

2) **"Fraudulent practice"** - any omission or misrepresentation that may mislead or attempt to mislead so that financial or other benefits may be obtained or an obligation avoided. Such practices include a

false declaration or false information for participation in a tender process or to secure a contract or in the execution of the contract;

3) **"Anti-competitive practice"** - any collusion, bid-rigging or anti-competitive arrangement, or any other practice coming under the purview of the Competition Act, 2002, between two or more bidders, with or without the knowledge of the Procuring Entity, that may impair the transparency, fairness, and the progress of the Tender Process or to establish bid prices at artificial, non-competitive levels;

4) **"Coercive practice"** - harming or threatening to harm persons or their property to influence their participation in the Tender Process or affect the execution of a contract;

5) **"Conflict of interest"** –participation by a bidding firm or any of its affiliates who are either involved in the Consultancy Contract to which this procurement is linked; or if they are part of more than one bid in the procurement; or if their personnel have a relationship or financial or business transactions with any official of procuring entity who are directly or indirectly related to tender or execution process of contract; or improper use of information obtained by the (prospective) bidder from the Procuring Entity with an intent to gain unfair advantage in the Tender Process or for personal gain;

6) **"Obstructive practice"** - materially impede procuring entity's investigation into allegations of one or more of the above mentioned prohibited practices either by deliberately destroying, falsifying, altering; or by concealing of evidence material to the investigation; or by making false statements to investigators and/ or by coercive practices mentioned above, to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or by impeding the Procuring Entity's rights of audit or access to information;

1.2 Obligations for Proactive Disclosures:

1) Procuring authorities, bidders, suppliers, contractors, and consultants are obliged under this Code of Integrity to *suo-moto* proactively declare any conflict of interest (coming under the definition mentioned above - pre-existing or as and as soon as these arise at any stage) in any Tender Process or execution of the contract. Failure to do so shall amount to a violation of this code of integrity.

2) Any bidder must declare, whether asked or not in a bid-document, any previous transgressions of such code of integrity during the last three years or of being under any category of debarment by the Central Government or by the Ministry/ Department of the Procuring Organisation from participation in Tender Processes. Failure to do so shall amount to a violation of this code of integrity.

1.3 Misdemeanours and Penalties

The following shall be considered misdemeanours - if a bidder/ contractor either directly or indirectly, at any stage during the Tender Process or during the execution of resultant contracts:

1) commits any of the following misdemeanours:

   (a) violates the code of Integrity or the Integrity Pact if included in the Tender/ Contract;
   (b) any other misdemeanour, e.g., supply of sub-standard quality of material/ services/ work or non-performance or abandonment of contract or failure to abide by 'Bid Securing Declaration'.

2) commits any of the following misdemeanours:

(a) has been convicted of an offence:

(i) under the Prevention of Corruption Act, 1988; or
(ii) the Indian Penal Code or any other law for the time being in force for causing any loss of life or property or causing a threat to public health as part of the execution of a public procurement contract.

(b) is determined by the Government of India to have doubtful loyalty to the country or national security consideration.

(c) Employs a government servant, who has been dismissed or removed on account of corruption or employs a non-official convicted for an offence involving corruption or abetment of such an offence, in a position where he could corrupt government servants or employs a government officer within one year of his retirement, who has had business dealings with him in an official capacity before retirement.

1.4 Penalties for Misdemeanours

Without prejudice to and in addition to the rights of the Procuring Entity to other remedies as per the Tender-documents or the contract, If the Procuring Entity concludes that a (prospective) bidder/ contractor directly or through an agent has committed a misdemeanour in competing for the tender or in executing a contract, the Procuring Entity shall be entitled, and it shall be lawful on his part to take appropriate measures, including the following:

1.4.1 if his bids are under consideration in any procurement

3) Enforcement of Bid Securing Declaration in lieu of forfeiture or encashment of Bid Security.

4) calling off of any pre-contract negotiations, and;

5) rejection and exclusion of Bidder from the Tender Process

1.4.2 if a contract has already been awarded

6) Termination of Contract for Default and availing all remedies prescribed thereunder;
7) Encashment and/ or Forfeiture of any contractual security or bond relating to the procurement;
8) Recovery of payments including advance payments, if any, made by the Procuring Entity along with interest thereon at the prevailing rate (MIBID - Mumbai Interbank Bid Rate);

1.4.3 Remedies in addition to the above:

In addition to the above penalties, the Procuring Entity shall be entitled, and it shall be lawful on his part to:

9) File information against Bidder or any of its successors, with the Competition Commission of India for further processing, in case of anti-competitive practices;

10) Initiate proceedings in a court of law against Bidder or any of its successors, under the Prevention of Corruption Act, 1988 or the Indian Penal Code or any other law for transgression not addressable by other remedies listed in this sub-clause.

11) Remove Bidder or any of its successors from the list of registered suppliers for a period not exceeding two years. Suppliers removed from the list of registered vendors or their related entities may be allowed to apply afresh for registration after the expiry of the period of removal.

12) Initiation of suitable disciplinary or criminal proceedings against any individual or staff found responsible.

13) Debar, a bidder/ contractor from participation in future procurements without prejudice to Procuring Entity's legal rights and remedies. Debarment shall automatically extend to all the allied firms of the debarred firm. In the case of Joint Venture/ consortium, all its members shall also stand similarly debarred:

    (a) A Ministry/ Department (or any of its CPSUs, attached offices, autonomous bodies) may debar a bidder or any of its successors from participating in any Tender Process undertaken by all its procuring entities for a period not exceeding two years commencing from the date of debarment for misdemeanours. The Ministry/Department shall maintain such a list which shall also be displayed on their website.
    (b) Central Government (Department of Expenditure (DoE), Ministry of Finance) may debar a bidder or any of its successors from participating in any Tender Process undertaken by all its procuring entities for a period not exceeding three years commencing from the date of debarment for misdemeanours. DoE shall maintain such a list which shall be displayed on Central Public Procurement Portal (CPPP).

Integrity Pact
(To be signed on Plain Paper)

(To be submitted as part of Technical bid)

Integrity Pact for Tender Document No. Tend No./ xxxx; Tender Title: GOODS

This Agreement (hereinafter called the Integrity Pact) is made on _____ day of the month of _____202__ at _____, India.

BETWEEN

Procuring Organisation, ---------- through Head of the Procuring Organisation, for and on behalf of President of India (hereinafter called the "The Principal", which expression shall mean and include unless the context otherwise requires, his successors in office and assigns) of the First Part

AND

M/ s. _____ (hereinafter called the "The Bidder/ Contractor" which expression shall mean and include, unless the context otherwise requires, his successors and permitted assigns) of the Second Part.

PREAMBLE

'The Principal' intends to award, under laid down organizational procedures, contract/ s for _____, 'The Principal' values full compliance with all relevant laws of the land, rules, regulations, economic use of resources and of fairness/ transparency in its relations with its Bidder(s) and/ or Contractor(s).

In order to achieve these goals, the Principal shall appoint Independent External Monitors (IEMs) who shall monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1 - Commitments of the 'The Principal'

14) 'The Principal' commits itself to take all measures necessary to prevent corruption and to observe the following principles: -

(c) No employee of the Principal, personally or through family members, shall in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
(d) The Principal shall, during the tender process, treat all Bidder(s) with equity and reason. The Principal shall in particular, before and during the tender process, provide to all Bidder(s) the same information and shall not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
(e) The Principal shall exclude from the process all known prejudiced persons.

15) If the Principal obtains information on the conduct of any of its employees, which is a criminal offence under the IPC/ PC Act, or if there be a substantive suspicion in this regard, the Principal shall inform the Chief Vigilance Officer and, in addition, can initiate disciplinary actions.

Section 2 - Commitments of the 'Bidder/ Contractor'

1) The 'Bidder/ Contractor' commit themselves to take all measures necessary to prevent corruption. The 'Bidder/ Contractor' commit themselves to observe the following principles during participation in the tender process and during the contract execution.

   a. The 'Bidder/ Contractor' shall not, directly or through any other person or firm, offer, promise, or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

   b. The 'Bidder/ Contractor' shall not enter with other Bidders info any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelisation in the tender process.

   c. The 'Bidder/ Contractor' shall not commit any offence under the relevant IPC/ PC Act; further, the 'Bidder/ Contractor' shall not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals, and business details, including information contained or transmitted electronically.

   d. The 'Bidder/ Contractor' of foreign origin shall disclose the name and address of the Agents/ representatives in India if any. Similarly, the Bidder/ Contractors of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder/ Contractor. Further, as mentioned in the Guidelines, all the payments made to the Indian agent/ representative have to be in Indian Rupees only. Copy of the "Guidelines on Indian Agents of Foreign Suppliers" is placed in Appendix to this agreement.

   e. The 'Bidder/ Contractor' shall, when presenting their bid, disclose any and all payments made, is committed to, or intends to make to agents, brokers, or any other intermediaries in connection with the award of the contract.

   f. Bidder/ Contractor who have signed the Integrity Pact shall not approach the Courts while representing the matter to IEMs and shall wait for their decision in the matter.

2) The 'Bidder/ Contractor' shall not instigate third persons to commit offences outlined above or be an accessory to such offences.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the 'Bidder/ Contractor', before award or during execution, has committed a transgression through a violation of Section 2, above or in any other form such as to put their reliability or credibility in question, the Principal is entitled to disqualify the 'Bidder/ Contractor' from the tender process or take action as per the procedure mentioned in the "Guidelines on Banning of business dealings".

Section 4 - Compensation for Damages

1) If the Principal has disqualified the 'Bidder/ Contractor' from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover from 'Bidder/ Contractor' the damages equivalent to Earnest Money Deposit/ Bid Security.

2) If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the contractor liquidated damages of the contract value or the amount equivalent to Performance Bank Guarantee.

Section 5 - Previous transgression

1) Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.

2) If Bidder makes an incorrect statement on this subject, he can be disqualified from the tender process, or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".

Section 6 - Equal treatment of all Bidders/ Contractors/ Subcontractors

1) In the case of Sub-contracting, the Principal Contractor shall take responsibility for the adoption of the Integrity Pact by the Sub-contractor.

2) The Principal shall enter into agreements with identical conditions as this one with all Bidders and Contractors.

3) The Principal shall disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.

Section 7 - Criminal charges against violating Bidder(s)/ Contractor(s)/ Subcontractor(s)

If the Principal obtains knowledge of the conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal shall inform the same to the Chief Vigilance Officer.

Section 8 - Independent External Monitor

1) The Principal appoints a competent and credible Independent External Monitor for this Pact after approval by Central Vigilance Commission. The task of the Monitor is to review independently and objectively whether and to what extent the parties comply with the obligations under this agreement.

2) The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. The Monitor would have access to all Contract documents whenever required. It shall be obligatory for him/ her to treat the information and documents of the Bidders/ Contractors as confidential. He/ she reports to the Head of the Procuring Organisation.

3) The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all Project documentation of the Principal, including that provided by the contractor. The Contractor shall also grant the Monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to their project documentation. The same is applicable to Sub-contractors.

4) The Monitor is under contractual obligation to treat the information and documents of the Bidder/ Contractor(s)/ Sub-contractor(s) with confidentiality. The Monitor has also signed declarations on 'Non-Disclosure of Confidential Information and of 'Absence of Conflict of Interest'. In case of any conflict of interest arising at a later date, the IEM shall inform the Head of the Procuring Organisation and recuse himself/ herself from that case.

5) The Principal shall provide to the Monitor sufficient information about all meetings among the parties related to the Project provided such meetings could have an impact on the contractual relations between the Principal and the contractor. The parties offer the Monitor the option to participate in such meetings.

6) As soon as the Monitor notices, or believes to have noticed, a violation of this agreement, he shall so inform the Management of the Principal and request the Management to discontinue or take corrective action or to take other relevant action. The monitor can, in this regard, submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action, or tolerate action.

7) The Monitor shall submit a written report to the Head of the Procuring Organisation within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

8) If the Monitor has reported to the Head of the Procuring Organisation, a substantiated suspicion of an offence under relevant IPC/ PC Act, and Head of the Procuring Organisation has not, within the reasonable time, taken visible action to proceed against such offence or reported it to the Chief Vigilance Officer, the Monitor may also transmit this information directly to the Central Vigilance Commissioner.

9) The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

This Pact begins when both parties have legally signed it. It expires for the contractor 12 months after the last payment under the contract and for all other Bidders 6 months after the contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.

If any claim is made/ lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above unless it is discharged/ determined by the Head of the Procuring Organisation.

Section 10 - Other provisions

1) This agreement is subject to Indian Law. The place of performance and jurisdiction is the Registered Office of the Principal, i.e., New Delhi.
2) Changes and supplements, as well as termination notices, need to be made in writing. Side agreements have not been made.
3) If the contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
4) Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties shall strive to come to an agreement with their original intentions.
5) Issues like Warranty/ Guarantee etc. shall be outside the purview of IEMs.
6) In the event of any contradiction between the Integrity Pact and its Appendix, the Clause in the Integrity Pact shall prevail.
7) For and on behalf of the Principal

(Name of the Officer and Designation)
(Office Seal)
For and on behalf of 'Bidder/ Contractor'

(Name of the Officer and Designation)
(Office Seal)
For and on behalf of the Principal
Place
Date
Witness 1:
(Name & Address)
Witness 2:
(Name & Address)

OEM's Authorization

(On Company Letter Head)

(To be submitted as part of Technical bid)

OEM's Name_____

[Address and Contact Details]

OEM's Reference No._____ Date…….

The President of India, through

Head of Procurement

Procuring Organisation

[Complete address of the Procuring Entity]

Dear Sirs,

Ref. Your Tender Document No. Tend No./ xxxx; Tender Title: GOODS

1) We, ----------, are proven and reputable manufacturers of the Tendered Goods. We have factories at----------. We hereby authorise Messrs---------- (*name and address of the authorised dealer)* to submit a bid, process the same further and enter into a contract with you against above referred Tender Process for the supply of above Goods manufactured by us. Their registration number with us is …….., dated/ since……

2) We further confirm that no Contractor or firm or individual other than Messrs. ……... (*name and address of the above-authorised dealer*) is authorized for this purpose.

3) As principals, we commit ourselves to extend our full support for warranty obligations, as applicable as per the Tender Document, for the Goods and incidental Works/ Services offered for supply by the above firm against this Tender Document.

4) Our details are as under:

   (f) Name of the Company:…….
   (g) Complete Postal Address: ……
   (h) Pin code/ ZIP code: ……
   (i) Telephone nos. (with country/ area codes): ……
   (j) Fax No.: (with country/ area codes): ……
   (k) Mobile Nos.: (with country/ area codes): ……..
   (l) Contact persons/ Designation: ……
   (m) Email IDs: ……

5) We enclose herewith, as appropriate, *our ---------- (Bye-Laws/ Registration Certificate/ Memorandum of Association/ Partnership Agreement/ Power of Attorney/ Board Resolution*)

Yours faithfully,

……..……

[signature with date, name, and designation]

for and on behalf of Messrs……

[name & address of the OEM and seal of company]

DA: As above

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI
(An autonomous Research Institute of Department of Science and Technology, Government of India)
Knowledge City, Sector 81, Mohali – 140306, PUNJAB
Phone No: 0172 – 2297000
Website: www.inst.ac.in

BID PARTICULARS

1. Name of the Supplier :
2. Address of the Supplier :
3. Availability of demonstration of equipment : Yes / No
4. Tender cost enclosed: : Yes/No if yes
5. Online EMD submission information enclosed : Yes / No if Yes

   Transaction ID/No. of Transfer_____

   Transaction date: _____

   Amount of Transaction_____

   Name of Bank_____

   Address of Bank_____

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry

   Name:

   Address:

   Ph:

   Fax:

   Mobile:

   Email:

   Web:

INSTITUTE OF NANO SCIENCE AND TECHNOLOGY, MOHALI
(An autonomous Research Institute of Department of Science and Technology, Government of India)
Knowledge City, Sector 81, Mohali – 140306, PUNJAB
Phone No: 0172 – 2297000
Website: www.inst.ac.in

Compliance statement for the tender specifications

Tender Ref No.: **INST/12(350)/2021-Pur**

S.No.	Check list of documents/Undertakings	Yes/No	Remarks (give explanation if the answer is No)
1.	Is EMD details attached and tender fee details? (if applicable)		
2.	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
3.	If authorised dealer, recent dated certificate to this effect from OEM, attached or not?		
4.	Undertaking from OEM regarding technical support & extended warranty period		
5.	Validity of 120 days or not?		
6.	Price Reasonability Certificate enclosed as per format??		
7.	Undertaking from bidder regarding acceptance of tender terms & conditions		
8.	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached?		
9.	Does the instrument comply with all the specifications detailed? Attach a separate sheet showing compliance with the specifications and explanations thereto if the equipment varies from the requested specifications.		
10.	Whether free Installation, Commissioning and Application Training offered?		
11.	Whether comprehensive onsite warranty offered?		
12.	Whether Annual maintenance after expiry of comprehensive onsite warranty quoted separately?		

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Annexure – 1

PRICE REASONABILITY CERTIFICATE

This is to certify that we have offered the maximum possible discount to you in our Quotation No. _____ dated _____ .

We would like to certify that the quoted price are the minimum and we have not quoted the same item on lesser rates than those being offered to INST to any other customer nor we will do so till the validity of offer or execution of purchase order, whichever is later.

Seal and Signature of the tenderer

SPECIFICATION FOR "Molecular Beam epitaxy with in-situ RHEED and UHV preparation chamber and load lock"

INST invites tender bid for "Molecular Beam epitaxy (MBE) based deposition system with in-situ RHEED and UHV preparation chamber and load lock"

System Overview:

The deposition system must have two chambers. The first chamber is called *growth chamber* and the second chamber is called the *preparation chamber*. The two chambers must allow sample transfer using UHV compatible transfer arm. The growth chamber will allow for molecular beam epitaxy (MBE) based growth process involving deposition using effusion cells, and thermal cracker cells. The preparation chamber will be used to prepare samples before or after MBE growth procedures and will allow deposition of metal and metal oxide films using sputtering and e-beam evaporation methods. The preparation chamber must allow introduction of substrate into the deposition system either manually directly from air through appropriate flange or/and optionally through a load lock chamber.

1 GROWTH CHAMBER:

A. UHV stainless Steel (made of DIN 1.4406/SS 316LN or DIN 1.404/SS 316L or equivalent) chamber equipped with appropriate cryo-panel for effusion cells, thermal cracker cells and different ports for specific vacuum pumping. The growth chamber must be compatible to growth of chalcogenide materials like Te, Se, and Sb.

B. Growth chamber must be of vertical deposition geometry with substrate facing downward during film growth.

C. Appropriate arrangement of vacuum pumps should be provided to attain Base pressure < 2 x 10^{-10} mbar and < 8 x10^{-11} (LN_2 cooling). The vacuum levels must be achieved within 72 Hrs or less time post system bakeout.

D. ***Pumping System***: The pumping system must include, turbo molecular pump (TMP), ion getter pump (IGP) with titanium sublimation pump (TSP) or other getter pumps and dry scroll pump.

(i) Turbo pump having capacity of ≥ 260 l/s with dry oil free scroll pump. Power supply and suitable cabling must be provided.

Manufacturer: Turbo Molecular Pump (TMP): Pfeiffer/Varian/Edwards or equivalent internationally reputed brands.

Dry scroll pump: Pfeiffer/Agilent/Edwards or equivalent internationally reputed brands.

Gate valve: A Pneumatically operated VAT gate valve between MBE and TMP must be provided with automatic interlock for safeguarding pump in case of vacuum failure

(ii) Ion pump (speed ≥ 300 l/s). Must have integrated cryoshroud and TSP. Power supply and suitable cabling to be provided alongwith.

Manufacturer: Pfeiffer/ Gamma/Agilent or equivalent internationally reputed brands.

Gate Valve: A Pneumatically operated VAT gate Valve between MBE and ion pump must be provided with interlock for safeguarding pump in case of vacuum failure

Position of pumps should be such that it prevents flaking or contaminants falling into the pumps.

E. ***Pressure management***: High sensitivity Bayard-Alpert ion gauge assembly to measure the vacuum pressure ($1x10^{-3}$ to $1x10^{-11}$ mbar). Pressure gauge to measure atm to 10^{-3} mbar for pre-vacuum line. Power Supply, controllers and suitable cabling to be provided along with gauges. All the vacuum gauges and controllers must be from reputed company like Pfeiffer or Edwards or equivalent internationally reputed brands.

F. ***Vacuum Pump Protection***:

- Appropriate cryo shroud/trap/panel/well must be provided for Turbo pump, ion pump and TSP, to trap Se, Te and Sb for protecting the pumps.
- Appropriate control and safety interlocked with the UHV measurement system.
- Extra port for future integration of cryo pump and/ or a cold trap must be provided

G. ***Cooling Shroud (double walled)***: The deposition chamber must have liquid nitrogen cooling shroud to isolate all effusion cells (reduce the cross-talk between high temperature cells). Cooling shroud must be around the manipulator and must be encircling all the effusion and cracker cells. The cooling shroud must be compatible to both liquid nitrogen and water cooling.

H. ***View ports:*** (i) Atleast two dedicated view port to see the inside of the chamber during transfer. The view port must have manual shutter to protected against material deposition

(ii) One Dedicated view port to see the effusion and cracker cells inside of the chamber. The view port must have manual shutter to protected against material deposition

I. **Additional ports for future integration of evaporation sources**: Atleast two additional ports must be available in confocal arrangement for future integration of additional effusion cell and/or ebeam evaporator.

J. ***Effusion and Thermal cracker cells***:

(i) Number of effusion cells: 3, Number of cracker cells: 3.

(ii) The cells and the additional ports (as mentoned in point I above) for future integration of effusion/ebeam evaporators must be confocal arrangement in a way that the focus of deposition of all cells must coincide at the center of substrate on which deposition will be carried out.

(iii) All the cells must be separated by cell dividers made of Tantalum to reduce cross contamination. Details of cells are as follows:

(a) *High Temperature effusion cells Qty: 1 Set*

- Capacity: 10cc or better
- Temperature: Atleast upto 2000 C
- One Ta crucible to be provided

- Integrated pneumatically operated shutter or electric shutter with soft acting motion controllable through software should be provided.
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided

(b) *Medium Temperature effusion cells Qty: 1 Set*

- Capacity: 30cc or better
- Maximum Temperature: 1400 C
- One Ta and one Al_2O_3 crucible to be provided
- Integrated pneumatically operated shutter or electric shutter with soft acting motion controllable through software should be provided
- A hot lip to avoid condensation at crucible orifice
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided

(c) *Low Temperature effusion cells Qty: 1 Set*

- Capacity: 30 cc or better
- Maximum Temperature: 1000 C
- One PBN crucible to be provided
- Integrated pneumatically operated shutter
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided

(d) Thermal cracker cell for Sb Qty: 1 set

- Must have separate heating stage for evaporation and cracking of evaporated molecules
- It should be all PBN solution in the sense that the vapor of corrosive evaporant material should get only in contact with PBN parts.
- The cell must have PBN insulator to save from corrosion and to minimize cross talk bet ween heating stages
- Cracker insert should be made of PBN
- Both the heating stages (evaporation and cracking) should be separately adjustable with individual
- PBN crucible must be provided with 100 cc or better nominal volume
- Integrated pneumatically operated shutter
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided
- *Operating temperature range:*
  Heating stage for evaporation must be atleast between 100 C to 800 C
  Heating stage for cracking must be atleast between 300 C to 1000 C

(e) Valved cracker cell for Te Qty: 1 set

- Must have separate heating stage for evaporation and cracking of evaporated molecules

- It should be full PBN solution in the sense that the vapor of corrosive evaporated material should get only in contact with PBN parts.
- The cell must have PBN insulator between the heating stages to minimize cross talk bet ween heating stages
- Cracker insert should be made of PBN
- Both the heating stages (evaporation and cracking) should be separately adjustable with individual
- PBN crucible must be provided with 100 cc or better nominal volume
- Integrated water cooling unit
- Valve unit must be made of PBN with motoroized integrated shutter
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided
- *Operating temperature range:*
  Heating stage for evaporation must be atleast between 100 C to 800 C
  Heating stage for cracking must be atleast between 300 C to 1000 C

(f) Valved cracker cell for Se Qty: 1 set

- Must have separate heating stage for evaporation and cracking of evaporated molecules
- It should be full PBN solution in the sense that the vapor of corrosive evaporated material should get only in contact with PBN parts.
- The cell must have PBN insulator between the heating stages to minimize cross talk bet ween heating stages
- Cracker insert should be made of PBN
- Both the heating stages (evaporation and cracking) should be separately adjustable with individual
- PBN crucible must be provided with 100 cc or better nominal volume
- Integrated water cooling unit
- Valve unit made be made of PBN with motorized integrated shutter
- Dedicated thermocouple, pid control and all necessary cables for running the cell must be provided
- *Operating temperature range:*
  Heating stage for evaporation must be atleast between 100 C to 800 C
  Heating stage for cracking must be atleast between 300 C to 1000 C

K. Mandatory Power supplies for cell operation to be provided for co-deposition:

Appropriate number (not less than 5) of power supplies control electronic and cables should be provided so that following co-deposition operations can be done:
(i) Two valved cracker cells and one High-temperature effusion cell could be simultaneously used for evaporation
(ii) One valved cracker cell, one thermal cracker cell and one High-temperature effusion cell could be simultaneously used for evaporation

(iii) One high-temperature effusion cell, one medium-temperature effusion cell and one cracker cell can be simultaneously used for evaporation
(iv) One low-temperature effusion cell, one medium-temperature effusion cell and one cracker cell can be simultaneously used for evaporation

L. Manipulator and sample plate:

- Two axis (Z-axis and Rotation axis) UHV Manipulator
- Z-axis: must allow for 0-50mm motion
- Rotation axis: motorized continuous rotation of at least 30 RPM
- Heating stage for reaching atleast upto 1200C with PID controller
- Radiation shield to protect manipulator against material coatings
- Molybdenum substrate holder (sample plate) compatible with the sample manipulator
- Appropriate sample plate style to handle sample size of upto 12 mm x 12mm (2 qty) and 10mm x 10 mm (4 qty). one blank sample plate to be provided

M. Analytical Instruments to be provided in the growth chamber:

(i) Quartz crystal microbalance

- Should be UHV beakable
- Must have shutter
- Thickness resolution: 0.015A or better
- Rate resolution: 0.015A/S or better
- Frequency resolution: 0.015Hz or better
- Linear feedthrough unit to adjust position the sensor position inside the UHV chamber
- All necessary measurement electronics, controller and cables to be supplied for reading out information into PC
- Atleast 15 qty of gold plated quartz plates to be provided
- Necessary water cooling unit to be provided

(ii) quadrapole mass analyzer/ residual gas analyzer

- Resolution 10^{-14} or better
- Must detect mass 1-200 AMU or better
- Software to control and analyze through computer
- Necessary power supply and cables to be provided
- Manufacturer should be reputed like SRS etc.

(iii) RHEED

- In-situ characterization facility with as RHEED with 15 KeV energy gun. All associated electronic assembly packages, power supply and required cables should be included. Must be controllable through computer.

- Appropriate RHEED screen with manual shutter for protection against material deposition.
- Manufacturer: reputed brand like Staib
- CCD camera and analysis software to be provided as option (cf option section))

N. ***Main Shutter:*** A main shutter infront of substrate to protect substrate surface from deposition during process stabilization/ flux measurement/ thickness measurements etc. The shutter must be made of tantalum.

2. PREPARATION CHAMBER

The preparation chamber will be used to prepare the substrate by heating before introducing to the MBE chamber and deposit metal and metal - oxide layer. The deposition in the preparation chamber will be done using DC or RF sputtering depending upon the nature of film to be prepared on top of MBE processed samples. The preparation chamber must have appropriate port that can allow direct manual introduction of samples without the requirement of a load lock and transfer arm arrangement.

A. Must be made of UHV stainless steel (DIN 1.404/SS 316L)

B. Appropriate arrangement of vacuum pumps should be provided to attain Base pressure < 5 x 10^{-9} mbar

C. Vacuum gauges along with controller, and suitable cabling to cover the full range of vacuum operation.

D. Pumping system must include turbo molecular pump (685l/s or better pumping of N_2), dry scroll pump, any further vacuum pumps as deemed necessary to attain the base pressure. All pumps must have their power supplies and required cables for running. Pumps and gauges must be from Pfeiffer/Varian/Edwards or equivalent internationally reputed brands. It must be ensured that Base pressure < 5 x 10^{-9} mbar vacuum is reached within 8 Hrs.

E. Must have an appropriate transfer arm for transferring sample from preparation chamber to growth chamber.

F. A VAT gate valve between preparation chamber and growth chamber

G. Must have appropriate port that can allow direct manual introduction of samples without the requirement of a load lock -transfer arm arrangement.

H. Must have a UHV Planar magnetron source 2": Qty 1

- Target Diameter: 2"
- Must be bakeable upto 200C
- Water cooling
- Pneumatic shutter.
- Must allow for DC, RF and AC operation
- Must allow both magnetic and non-magnetic target for deposition
- Must be compatible O_2, N_2, and Ar

I. DC Power supply for magnetron source with 1000 W or better power. Cabling to be provided. Power supply must be of internationally reputed brand

J. RF Power supply for magnetron source with match box.
Power 300W, Frequency: 13.56 MHz, RS232 interface and set of suitable cables to be provided. Power supply must be of internationally reputed brand

K. Gas dosing system for sputter sources: Must have appropriate mass flow controllers, necessary leak valves and gas capillary connections and tubings compatible with O_2, N_2 and Ar

M. Sample stage/manipulator with rotation (0-30 RPM or better) and heating upto 1000C
Necessary power supply, PID controller and cabling to be provided.

N. Quartz crystal microbalance

- Should be UHV bakeable
- Must have shutter
- Thickness resolution: 0.015A or better
- Rate resolution: 0.015A/S or better
- Frequency resolution: 0.015Hz or better
- All necessary cables to be supplied for connecting to electronics, controller and reading out information into PC to be supplied
- Necessary water cooling unit to be provided

O. Viewport: There should be a view port to see the evaporator and sputter source and sample transfer inside of the chamber. The view port must have manual shutter to protect against material deposition.

P. Ports: Additional ports should be available for future integration of atleast two more sputter source or one sputter source and one ion source/ebeam evaporator

3. Load lock:
Stainless steel high Vacuum chamber with flanges for connection to the preparation chamber, a magnetic transfer rod, fast loading door, WRG pressure gauge. Must be capable of attaining base pressure of $2x10^{-7}$ mbar or better. Manual gate valve in between preparation chamber and loadlock. Must have sample storage for atleast for three samples. IR heating for special lamp heating unit to bake out the samples and remove water quickly. The load lock can be proposed with shared pumping system with preparation chamber via bypass lines.

Optionally cost for dedicated pumping system may be quoted under optional items

4. PROCESS CONTROL SYSTEM AND COMPUTER PACKAGE

- State-of-the-art PC unit must be provided
- Software control of Valve cluster and modular expandable electrical terminal to interface analog and digital signals, such as:
  - Valves and Shutters (pneumatic or electric)
  - Temperature sensors

- Analog signals from other devices
- Digital signals from other devices
- (Heating lamps or similar
- Motion (intelligent servo motors)

- Appropriate I/O computer interface via Ethernet TCP-IP where necessary must be provided
- Appropriate software for control exclusively from PC that should include
  - For system control (venting, evacuating and bake-out)
  - Incl. functions like ramping, logging and conditional sequence
  - Graphical user interface with completely interactive elements for a best view over the system
  - Capable of running growth recipes and complex sequences with high time resolution through a graphical editor/ graphical user interface
  - Must have appropriate Continuous data logging capabilities
  - Complete control for devices with communication interface must be integrated
  - Note: Implementation of further instruments via remote access must be done for free within the first two years after delivery

5. FRAME

- Made from stainless steel
- To keep all chambers and necessary accessories

6. RACK and MEDIA DISTRIBUTION

- Appropriate arrangement must be provided for mounting
  - Water cooling distribution
  - Central distribution of the different gases for the preparation chamber, pressed air etc.
  - Central distribution of the power and the thermocouple connections to the effusion cells, the manipulator heaters etc.
- Free space for further mounting of valve banks for shutter and pneumatically gate valves etc.
- Free space for further mounting of additional units, mounted to the media panel
- Appropriate rack must be provided for PID controllers, computers power supply, main switch, power distribution box etc. There must be flexibility on positioning and layout of racks to enable optimum working practice in our laboratory.

7. BAKE-OUT TENT and/or arrangements for the Chambers and ion pump

- Bake-out equipment to bake out the system including the growth chamber, ion-pump, and preparation chamber
- appropriate radiation heaters must be part of bake out package alongwith fan for a homogeneous temperature distribution inside the bake out area
- Proper bake out controller for the chambers

8. UTILITIES/SPARES

A. Utiliies

Tool case for minor maintenance work incl. helpful accessories:

- Various suitable wrenches, screwdrivers, Allen® keys, pincers etc.
- Torch light, graduated metal rule, level, glass fiber pencil etc.
- High temperature grease for lubrication of air-side mechanics
- Set of spare sealing

B. Spares

- Complete set of gaskets (15 no. of each type/size of flanges, Silver coated). For the upper flange of the main chamber and the preparation chamber which will rarely be opened one additional gasket should be provided.
- Spare filaments (4 nos. for RGA, each ion Gauges)
- Fuses (20 nos. For each type)
- TSP filaments (10 nos.)

9. Water chiller required for running must be provided

10. Air compressor required for running must be provided

OPTIONAL ITEMS:

1. UHV Electron-Beam Evaporator for high purity evaporating of different kind of materials by electron-beam evaporation.
   - Maximum Temperature range 2700C or better
   - Must have X-Y beam deflection
   - Necessary Power supply , controller and suitable cable to be provided
   - Crucible size: 5cc or better
   - Tantalum crucible to be provided
   - Pneumatic shutter
   - Must be mountable in vertical deposition geometry

2. Dedicated pumping system for Load lock

3. UHV Planar magnetron source 2”
   - Target Diameter: 2”
   - Must be bakeable upto 200C
   - Water cooling
   - Pneumatic shutter.
   - Must allow for DC, RF and AC operation
   - Must allow both magnetic and non-magnetic target for deposition
   - Must be compatible O_2, N_2, and Ar

4. **Beam Flux Monitor**
   - Mounted to a UHV linear feedthrough
   - Must include filament protection tube as shielding in home position
   - He leak checked, tested in UHV
   - Bakeable up to 200°C
   - With power supply
   - With connection cables and suitable connectors

5. CCD camera for imaging RHEED data and RHEED analysis software

6. Wobble stick for substrate manipulation in growth chamber

7. LN2 Deewar of atleast 100 liter alongwith appropriate transfer tube and/or mechanism between Deewar and the chamber for LN2 transfer to be quoted

8. Additional Power supply for effusion cells (apart from the mandatory once that are included in point K for the growth chamber)

9. *High Temperature effusion cells*

- Capacity: 10cc or better
- Temperature: Atleast upto 2000 C
- Integrated pneumatically operated shutter or electric shutter with soft acting motion controllable through software

Other required terms & conditions:

i. Layer growth training/material specifications.
ii. The vendor must have the proven capability to provide a thorough epilayer demonstration programme. Installation and Training at user site should be provided.
iv. Prospective suppliers must provide training for epitaxial growth for at least three days on the fully installed instrument. The source material and substrate for training to be provided by customer.

v. It is essential that the scientist(s) delivering the programme is (are) a full – time employee(s) of the system vendor and is (are), as such, expert and fully conversant with every aspect of machine operation, functionality and the philosophy of the design that led to its development. Further, the training manager(s) must be accessible for consultation beyond the completion of the scheduled epi-layer demonstration.

vi. **Utility power**: 230 V single or 440 V three phase, 50Hz. Total power consumption of the system under full operation should be mentioned. UPS requirements for the system should be mentioned.
vii. **Applications support**: The vendor must provide evidence that there lies embedded at the core of the company, a true applications culture that has evolved and continues to evolve with the companies technology interests. Application support that is void of heritage and pedigree will be viewed less favourably than otherwise.
viii. User reference list worldwide should be attached. A minimum of 5 successfully installed MBE system of similar type worldwide in the past 7 years.
ix. Hard and soft copies of all relevant documentation including operating manual, service manual etc., run up to epitaxy, source loading, installation should be provided.
x. Warranty for one year after the date of installation. Additional AMC for 4 years beyond the warranty period should also be quoted for.
xi. System Functionality to be demonstrated

- Functionality of water cooling and media distribution
- Functionality of effusion cells, PID controllers and shutter mechanisms
- Functionality of sputter guns
- Functionality of sample transfer, sample heating and sample rotation

- Achievement of Vacuum levels as per tender requirement for all the chambers
- Simultaneous co-deposition functionality of effusion cells

xii. Layer homogeneity

Achievable film homogeneity better than 1% over 10x10mm wafer must be demonstrated after showing the vacuum specification. A maximum of 2.5% edge area of the substrate may be excluded from this measurement. All required materials, and homogeneity measurement tools for characterization will provided by the customer in state-of-the-art quality. The customer covers all costs for materials and characterization for the growth.