

Global Tender

This is Request for Quotation for E-Beam Evaporation System at Centre for Nano Science and Engineering (CeNSE) at IISc, Bangalore.

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Section 1 - Bid Schedule

1	Tender No	CeNSE/SKS/NNFC/2025/05
2	Tender Date	22 nd August 2025
3	Item Description	E-Beam Evaporation system
4	Tender Type	Two bid system Technical Bid (Part A) Commercial Bid (Part B)
5	Place of tender submission	National Nanofabrication Centre, Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Malleshwaram, Bangalore - 560012 Karnataka, INDIA.
6	Last Date & Time for submission of tender	12 th September 2025, by 2pm IST
7	For further clarification	Gajendra M National Nanofabrication Centre, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore-560012 Email: gajendram@iisc.ac.in

Section 2 – Eligibility Criteria

Pre-qualification criteria:

1. If the Bidder is a local distributor/dealer/Agent, it is mandatory to attach authorization certificate along with the technical bid from the original equipment manufacturer. Only the Original Equipment Manufacturer or their authorized representatives across the globe shall participate in the bid.
2. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per - Annexure 4 and Annexure 5.
3. The Bidder must not be blacklisted/banned/suspended or have a record of any service- related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.
4. The materials will be used for high-tech research work by academic researchers. The vendor should have supplied the instrument either to CeNSE, Indian Institute of Science, Bangalore or other microelectronics fabrication unit of repute. Proof of the same should be attached.
5. The Bidder should have qualified technical service personnel for the instrument(s) based in India.
6. The order will be placed only on the bidder who participated in the bid.

Section 3 – Terms and Conditions

A) Submission of Tender:

1. All documentations in the tender should be in English.
2. Tender should be submitted in two envelopes (two bid system).
 - a. Technical Bid (Part-A) – Technical bid consisting of all technical details and check list for conformance to technical specifications.
 - i. The technical proposal should contain a technical compliance table with 5 columns.
 - ii. The first column must list the technical requirements, in the order that they are given in the technical requirement below.
 - iii. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible.
 - iv. The third column should describe your compliance with a “Yes” or “No” only. Ensure that the entries in column 2 and column 3 are consistent.
 - v. The fourth column should state the reasons/explanations/context for deviations, if any.
 - vi. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify response of previous columns, or provide additional details, compare your solution with that of your competitors or provide details as requested in the technical requirements table below.
 - b. Commercial Bid (Part-B) – Indicating item wise price for the items mentioned in the technical bid, **as per the format of quotation provided in tender**, and other commercial terms and conditions.
3. The technical bid and commercial bid should each be placed in separate sealed covers, superscribing on both the envelopes the tender no. and the due date. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscribed with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscribing tender number / due date & should reach the Main office, GF-15, Centre for Nanoscience and Engineering, Indian Institute of Science, Bangalore – 560012, India, on or before due date mentioned in the tender notice. In case due date happens

to be holiday the tender will be accepted and opened on the next working day. If the quotation cover is not sealed, it will be rejected.

5. All queries are to be addressed to the person identified in “Section 1 – Bid Schedule” of the tender notice.
6. GST/other taxes, levies etc., are to be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document (Indian Bidders only).
7. If price is not quoted in Commercial Bid as per the format provided in tender document the bid is liable to be rejected.
8. The Institute reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to the award of contract, without there by incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.
9. Incomplete bids will be summarily rejected.

B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, the purchase committee, IISc Bangalore, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

- a. To accept OR reject lowest tender or any other tender or all the tenders.
- b. To accept any tender in full or in part.
- c. To reject the tender, offer not confirming to the tender terms.

C) Validity of the Offer:

The offer shall be valid 60 Days from the date of opening of the commercial bid.

D) Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Bidders meeting the required eligibility criteria as stated in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.
3. Pre-qualification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or during commercial evaluation. The decision in regard to acceptance and / or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and decision in this regard shall be binding on the bidders.

4. The award of purchase-order will be subject to acceptance of the terms and conditions stated in this tender.
5. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
 - a) Non-submission of complete offers.
 - b) Receipt of bids after due date and time and or by email / fax (unless specified otherwise).
 - c) Receipt of bids in open conditions.
6. In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER had accepted the clauses as of the tender and no further claim will be entertained.
7. No revision in the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.
8. Lowest bid will be calculated based on the total price of all items tendered.

E) Purchase Order:

1. The order will be placed on the bidder whose bid is accepted by IISc based on the terms & conditions mentioned in the tender document.
2. The quantity of the items in tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.
3. If the quality of the product and service provided is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

F) Delivery:

It is mandatory to specify the delivery period.

G) Payment Terms:

The payments to non domestic vendors will be through a Letter of Credit and milestone of the payment will be determined after the mutual discussions with the successful bidder. As per GFR no advance payment can be made to domestic vendors, unless an equal amount of bank guarantee is provided.

H) Statutory Variation:

Any statutory increase in the taxes and duties subsequent to bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore subject to the claim being supported by documentary evidence. However, if any decrease takes place the advantage will have to be passed on to IISc, Bangalore.

I) Disputes and Jurisdiction:

Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Bangalore, India.

J) General:

1. All amendments, time extension, clarifications etc., within the period of submission of the tender will be communicated electronically. No extension in the bid due date/time shall be considered on account of delay in receipt of any document(s) by mail.
2. The bidder may furnish any additional information, which is necessary to establish capabilities to successfully complete the envisaged work. It is however, advised not to furnish superfluous information.
3. All imported items should be quoted in the currency of the country of origin, and all locally sourced items should be quoted in Indian Rupees.
4. Any information furnished by the bidder found to be incorrect, either immediately or at a later date, would render the bidder liable to be debarred from tendering/taking up of work in IISc, Bangalore.

Section 4 – Technical Specifications

1	Primary application	<ul style="list-style-type: none"> Electron Beam Evaporation system for both metal and reactive thin film depositions (metals such as Al, Au, Ni, Ti, and dielectrics such as SiO₂, Al₂O₃) on up to one 6" substrate.
2	Chamber	<ul style="list-style-type: none"> One Stainless Steel chamber must be provided.
		<ul style="list-style-type: none"> Three segmented chamber with individual UHV isolation valves with venting.
		<ul style="list-style-type: none"> Segment 1 - Load Lock - E-Beam Gun and Material loading chamber - openable to load materials.
		<ul style="list-style-type: none"> Segment 2 - Main Chamber - Continuous chamber pumping with cryo and backing pump. Isolating Segment 1 and 3.
		<ul style="list-style-type: none"> Segment 3 - Load Lock - Substrate loading area - direct openable type to load substrate fixtures or auto robotic arm transferrable type to load substrate. Specify the type of wafer transfer in the Technical Bid.
		<ul style="list-style-type: none"> Two sets removable stainless steel debris shields.
3	View Port	<ul style="list-style-type: none"> Shuttered viewport offset to reduce material deposition
4	Pumping	<ul style="list-style-type: none"> Ultimate pressure of $<5 \times 10^{-8}$ Torr with suitable pumping system to main chamber + load lock must be quoted.
		<ul style="list-style-type: none"> Load-Lock chamber volume and pumping capacity must allow $<1 \times 10^{-6}$ Torr in 15 minutes.
		<ul style="list-style-type: none"> Main chamber volume and pumping capacity must allow $<5 \times 10^{-8}$ Torr in 3 hours from 1 atm pressure.
		<ul style="list-style-type: none"> Include pump down curves and specifications in bid.
5	Main Chamber Pumping	<ul style="list-style-type: none"> Automatic pumping with suitable combination of cryo pump of 8" and dry backing/roughing pump. With automatic regeneration program in the software. Preferably CTL.
6	Load lock Chamber Pumping	<ul style="list-style-type: none"> Automatic pumping with suitable combination of Turbo pump and dry backing/roughing pump. Automatic wafer loading (small pieces to 6" wafers). Preferably Pfeiffer.

7	Pumping/Pressure control	<ul style="list-style-type: none"> Closed loop pressure control details with pressure sensor, gate/control valve, and feedback mechanism.
8	Tool Training	<ul style="list-style-type: none"> Cost of on-site training before shipment and post-installation at IISc to be included.
9	E-Beam Source	<ul style="list-style-type: none"> A 10-kW maximum power source with variable acceleration voltage of 4-10kV. Preferably FerroTec make EV M-8.
		<ul style="list-style-type: none"> E-Beam spot size in "mm" must be mentioned
		<ul style="list-style-type: none"> X-Deflection of +/- 3A
		<ul style="list-style-type: none"> Y-Deflection of +/- 3A
10	Ion Beam Source	<ul style="list-style-type: none"> KRI EH400 wide angle ion source for pre-cleaning the substrate
		<ul style="list-style-type: none"> Must support Ion Assisted Deposition (IAD)
11	Hearth	<ul style="list-style-type: none"> Water cooled hearth
		<ul style="list-style-type: none"> System should be capable to handle 6 evaporation sources
		<ul style="list-style-type: none"> CW and CCW mode of operation
12	Crucible/Liners	<ul style="list-style-type: none"> Crucible volume of 20cc with the crucible dimensions of 42.5mm OD, 19.5mm Height, 2.4mm Wall thickness and Angle 15 deg
		<ul style="list-style-type: none"> Total thickness of deposition for a single charge should be mentioned in the Technical Bid
		<ul style="list-style-type: none"> Tungsten, Graphite and Molybdenum crucibles/liners should be quoted as an option
13	Substrates	<ul style="list-style-type: none"> Up to 6-inch substrates in 1x6" configuration
14	Substrate Holder	<ul style="list-style-type: none"> Fixtures for 6", 4" and 2" wafers must be provided
		<ul style="list-style-type: none"> For small irregular size of samples, provide suitable clips for mounting

15	Substrate Rotation	<ul style="list-style-type: none"> Continuous automatic uniaxial rotation with variable speed up to 30rpm
16	Substrate heating	<ul style="list-style-type: none"> Substrate heating capability up to 600°C.
17	Shutters	<ul style="list-style-type: none"> Electro-pneumatically operated shutter for E-Beam gun, Ion gun and substrate to avoid flux at the substrate.
18	Working Distance	<ul style="list-style-type: none"> In-situ motorized substrate height modifications.
		<ul style="list-style-type: none"> Specify the working distance for uniformity of <5% on 4" and 6" wafer for Al 100nm deposition.
19	Gas flow	<ul style="list-style-type: none"> Mass flow controlled gas line (Ar) - 200 sccm with pneumatic isolation valves and filter.
		<ul style="list-style-type: none"> Mass flow controlled gas line (O2) - 200 sccm with pneumatic isolation valves and filter
		<ul style="list-style-type: none"> Mass flow controlled gas line (N2) - 200 sccm with pneumatic isolation valves and filter
20	Deposition rate monitoring	<ul style="list-style-type: none"> Quartz crystal monitors for real-time rate monitoring with feedback control for thickness calibration is mandatory. Tolerance of crystals limited to < 0.2Å/s
		<ul style="list-style-type: none"> Two QCM sensor heads, with failure-switch capability mid-run. Include as optional.
21	Film Uniformity	<ul style="list-style-type: none"> Uniformity error must be <5% across 6" wafer. Include uniformity mapping.
22	Uniformity Data	<ul style="list-style-type: none"> Uniformity data for 4" and 6" wafers with varying target-substrate distances must be provided for the thickness range of 100nm.
23	Materials to be deposited and typical rates	<ul style="list-style-type: none"> Deposition rates: Au, Ti & Ni (2 Å/s); SiO2 & Al2O3 (1 Å/s); Al (5 Å/s).
24	System Control	<ul style="list-style-type: none"> System should be equipped with an industrial-grade PC or console with the latest upgraded configurations
		<ul style="list-style-type: none"> Provision for comprehensive data logging of all individual recipes executed.

		<ul style="list-style-type: none"> Provision for comprehensive data logging of system hardware's parameters/data.
		<ul style="list-style-type: none"> Software interface must accurately reflect the real-time status of all connected hardware components for effective monitoring and control.
		<ul style="list-style-type: none"> Detailed tool drawings and fundamental electronic line diagrams must be included in the technical bid.
		<ul style="list-style-type: none"> A complete list of safety interlocks, along with a cause-and-effect diagram, is mandatory and should be provided as part of the technical documentation.
		<ul style="list-style-type: none"> Essential safety features such as electrical overload protection, mains indication lamps, emergency stop switches, vacuum interlock mechanisms, water flow sensors/protection, and process status light towers must be incorporated.
25	Process Recipe	<ul style="list-style-type: none"> A single complete recipe must be capable of controlling pumps, valves, gas flows, pressure, temperature, rotation, source control and other hardware.
		<ul style="list-style-type: none"> Both fully automated process sequencing and manual override capabilities for recipe control must be incorporated.
		<ul style="list-style-type: none"> Auto abort process if: set values are not met.
		<ul style="list-style-type: none"> Process must include filament usage in hours.
		<ul style="list-style-type: none"> Password protected accounts for users or process.
		<ul style="list-style-type: none"> Editing online process recipes must be enabled.
26	Cycle Time	<ul style="list-style-type: none"> Wafer In to Wafer Out time for 6" wafer with Al deposition of 100nm must be specified.
27	Foot Print	<ul style="list-style-type: none"> A floor plan must be a part of the technical bid. For the above-mentioned specifications tool's foot print must be provided in mm scale.
28	Clean Room Compatibility	<ul style="list-style-type: none"> The system should be compatible with better than class 1000 cleanroom environment.

29	Leak test port/flange and He leak integrity	<ul style="list-style-type: none"> He leak integrity $\leq 4 \times 10^{-9}$ sccs. Accessible He leak test port required.
30	Pre-Purchase Testing	<ul style="list-style-type: none"> To ensure the equipment conforms for specifications, the committee requires the vendor to perform some standard tests before the purchase process is complete. The validity of the tender will hinge on the successful and accurate measurement of these test samples noted as per item no 31.
31	Qualifications Criteria	<ul style="list-style-type: none"> Aluminum films of 100nm and 1000nm deposited on a 6-inch wafer, with deposition rates calibrated via quartz crystal monitors at 2 Å/sec and 5 Å/sec respectively, achieving $\pm 5\%$ thickness uniformity with sheet resistance $< 3 \sim 6 \times 10^{-6}$ Ohm.cm and thickness measurements mapping
		<ul style="list-style-type: none"> Titanium films of 100nm and 1000nm deposited on a 6-inch wafer, with deposition rates calibrated via quartz crystal monitors at 2 Å/sec and 5 Å/sec respectively, achieving $\pm 5\%$ thickness uniformity with sheet resistance $< 3 \sim 6 \times 10^{-4}$ Ohm.cm and thickness measurements mapping
		<ul style="list-style-type: none"> AFM measured Surface roughness (RMS value) of the Aluminum and Titanium deposited 100nm films should be less than 2nm
32	Acceptance Criteria	<ul style="list-style-type: none"> Demonstrate working with Beam Patterns
		<ul style="list-style-type: none"> Demonstrate working of Ion Assisted Deposition (IAD) and Ion Etch
		<ul style="list-style-type: none"> Demonstrate working of E-Beam supply at variable accelerating voltages
		<ul style="list-style-type: none"> Within-Wafer uniformity and Run to Run uniformity over 3 samples must be calculated using: $\sigma/\mu < 0.025$, where σ is standard deviation and μ is mean and the variation is calculated over 9-points on a wafer
		<ul style="list-style-type: none"> If offered system is robotic arm wafer transferable type: Demonstrate 25 transfers of robotic arm to support the movement of 6-inch and 4-inch wafers
33	SEMI Standards	<ul style="list-style-type: none"> The technical bid should include details of the SEMI standards the tool confirms to S2 and S8.



Section 5- Technical Bid

The technical bid should furnish all requirements of the tender along with all annexure in this section and submitted to:

The Chair,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.
Attention : Gajendra M, NNFC, 080 22933319

Annexure-1:

Details of the Bidder

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name
Designation, Seal

Date:

Annexure 2

Declaration regarding experience

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No: CeNSE/SKS/NNFC/2025/05

Dated:

Supply of _____

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has ____ years of experience in supplying and installing _____

(Signature of the Bidder)

Printed Name Designation, Seal

Date:

Annexure 3

Declaration regarding track record

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No: CeNSE/SKS/NNFC/2025/05

Dated:

Supply of _____

Sir,

I have carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred / blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I am competent officer in my company / firm to make this declaration.

OR

I declare the following:

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully
(Signature of the Bidder)

Name

Designation, Seal:

Date:



Annexure 4

Declaration for acceptance of terms and conditions

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No: CeNSE/SKS/NNFC/2025/05

Dated:

Supply of _____

Sir,

I have carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)

Name

Designation, Seal:

Date:

Annexure 5

Environmental Management System (EMS) Compliance Statement

To,
The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.

Ref: Tender No: CeNSE/SKS/NNFC/2025/05

Dated:

Supply of _____

Sir,

I ensure that our products, services, and operations adhere to all applicable national and local environmental regulations. I ensure to demonstrate environmental responsibility, including practices related to pollution prevention, waste management, and resource conservation. We also ensure to support in your facility's commitment to sustainable and environmentally sound practices by supplying materials, equipment, or services that do not adversely impact the environment. The same shall be included in the quotation, as any measures or provisions related to EMS compliance, including documentation, certifications, or declarations as appropriate. I am aware that the Failure to consider these requirements may render the quotation non-compliant with our procurement and environmental management standards. I further certify that I am an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)

Name

Designation, Seal:

Date:



Annexure 6

Details of items quoted:

- a. Company Name
- b. Product Name
- c. Part / Catalogue number
- d. Product description / main features
- e. Detailed technical specifications.
- f. Remarks

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

Section 6 – Commercial Bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
1.a	... (details of essential items)				
1.b	...				
2.	Optional items noted in the technical specification				
2.a	... (details of essential items)				
2.b	...				
7.	Cost of Insurance and Airfreight				
8.	CIP/CIF IISc, Bengaluru				

Any additional items

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total

Addressed to

The Chairman,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Malleshwaram, Bangalore - 560012
Karnataka, INDIA.
Attention: Gajendra M, NNFC, 080 22933319

Section 7 – Checklist

(This should be enclosed with technical bid- Part A)

The following items must be checked before the Bid is submitted:

1. Sealed Envelope “A”: Technical Bid

1. Section 5- Technical Bid (each page signed by the authorized signatory and sealed) with the below annexures:

- a. Annexure 1: Bidders details
- b. Annexure 2: Declaration regarding experience
- c. Annexure 3: Declaration regarding clean track record
- d. Annexure 4: Declaration for acceptance of terms and conditions
- e. Annexure 5: Details of items quoted

2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

2. Sealed Envelop “B”: Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both of these in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.