

Global Tender Notification for the supply and installation of Focused Ion Beam at MNCF, CeNSE, IISc Bangalore

(Last date of submission of tenders: 28th January 2022)

Best quotations valid for 120 days are invited for the supply and installation of Focused Ion Beam at MNCF, CeNSE, IISc Bangalore. MNCF, CeNSE, IISc is seeking to replace the current FIB tool, which is near the end of its useful life. Your quotation should indicate the terms and conditions of the quotations, delivery, delivery schedule, entry tax, payment terms, warranty coverage etc. The tender should be submitted in two separate sealed envelopes –one containing the "Technical bid" and other containing the "Commercial bid", both of which should be duly signed and must reach the undersigned on or before 17:00 hours 28th January 2022 .

C.I.P. Bangalore basis (by Air Freight only). Your quotation should mention the terms of delivery, delivery schedule, estimated delivery date, and payment terms.

The bids should be addressed to:

The Chairperson,
Centre for Nano Science and Engineering
Indian Institute of Science
Bangalore – 560012, India
With attention to: Dr. Suresha S J

Please enclose a compliance statement along with the technical bid.

Section 1 - Bid Schedule

1	Tender No	
2	Tender Date	07 th January 2022
3	Item Description	Supply and installation of Focused Ion Beam at MNCF, CeNSE, IISc Bangalore
4	Tender Type	Two bid system (i) Technical Bid (Part A) (ii) Commercial Bid (Part B)
5	Place of tender submission	Chairperson Office First Floor Centre for Nano Science and Engineering Indian Institute of Science, Bangalore 560012
6	Last Date & Time for submission of tender	28 th January 2022
7	For further clarification	Dr. Suresha S J MNCF Centre for Nano Science and Engineering Indian Institute of Science, Bangalore 560012 Email: sureshasj@iisc.ac.in Phone: +91 80 2293 3253

Section 2 – Eligibility Criteria

Prequalification criteria:

1. The Bidder's firm should have existed for a minimum of 5 years. (Enclose Company Registration Certificate)
2. The Bidder should have qualified technical service personnel for the instrument(s) based in India.
3. If the Bidder is a local distributor/dealer/Agent, attaching an authorization certificate with the technical bid from the original equipment manufacturer is mandatory.
4. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions.
5. The Bidder must not be blacklisted/banned/suspended by GOI or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3 – Terms and Conditions

1. Submission of Tender

1. All documentations in the tender should be in English.
2. The tender should be submitted in two envelopes (two-bid system).
 - a. Technical Bid (Part-A) – Technical bid consisting of all technical details and a checklist for conformance to technical specifications. The technical proposal should contain a technical compliance table with 5 columns.
 - i. The first column must list the technical requirements in the order given in the technical requirement below.
 - ii. The second column should provide specifications of the instrument against the requirement. Please provide quantitative responses wherever possible.
 - iii. The third column should only describe your compliance with a "Yes" or "No". Ensure that the entries in column 2 and column 3 are consistent.
 - iv. The fourth column should state the reasons/explanations/context for any deviations.
 - v. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify response of previous columns, provide further details, compare your solution with your competitors or provide details as requested in the technical requirements table below. (Suppliers who include any indication of prices in the technical bid will be automatically disqualified).
 - b. Commercial Bid (Part-B) – Indicating item wise price for the items mentioned in the technical bid, **as per the quotation format provided in tender**, and other commercial terms and conditions.
3. The technical and price bids should each be placed in separate sealed covers, superscribing the tender no. and the due date on both the envelopes. Both these sealed covers are to be placed in a bigger cover, which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.
4. The SEALED COVER superscribing tender number / due date & should reach Chairperson Office, Centre for Nanoscience and Engineering, Indian Institute of Science, Bangalore – 560012, India on or before the due date mentioned in the tender notice. If the due date happens to be a 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 addressed to the person identified in "Section 1 – Bid Schedule" of the tender notice.
6. The items are required for research purposes, and IISc is a DSIR registered institution, hence eligible for GST exemption (i.e. GST @ 5%). While submitting the price quote, this point must be taken care of. For getting a GST exemption certificate, successful bidders must submit a formal request together with an Invoice copy and Purchase order copy.
7. GST/other taxes, levies etc., are to be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document.
8. If the price is not quoted in Commercial Bid as per the format provided in the tender document, the bid is liable to be rejected.
9. The vendor should have qualified technical service personnel for the equipment based in India and should assure a response time of <48 hours.

10. Technical evaluation by the purchase committee may include a demonstration to verify functionalities and capabilities of the system quoted. The purchase committee reserves the right to reject the bids based on their technical evaluation of the quality of data, capability demonstration and service. If the data/requested capability demonstration does not happen within a stipulated timeframe, the bid will be rejected. Any discrepancy between the promised specifications and measurements will be deemed as technical non-compliance. Imported items should be shipped on C.I.P. Bangalore basis (by Air Freight only), and all components and accessories indicate component-wise and itemized breakup. Provide certificates for the country of origin of manufacturing for each line item. The price of every line item in the commercial bid should be quoted along with the total quoted price for the instrument to be operational (installed and ready to use) in our facility.
11. The purchase committee reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time before the award of contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.
12. Incomplete bids will be summarily rejected.

2. Cancellation of Tender:

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

1. To accept OR reject the lowest tender or any other tender or all the tenders.
2. To accept any tender in whole or in part.
3. To reject the tender, if it does not conform with the terms.

4. Validity of the Offer:

The offer shall be valid 120 Days from the date of opening of the commercial bid.

5. Evaluation of Offer:

1. The technical bid (Part A) will be opened first and evaluated.
2. Technical data, including the quality of images and capability demonstration, will be considered.
3. 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.
4. 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 regarding acceptance and/or rejection of any offer in part or whole shall be the sole discretion of IISc Bangalore, and the decision in this regard shall be binding on the bidders.
5. The contract award will be subject to acceptance of the terms and conditions stated in this tender.
6. Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
 - a. Non-submission of complete bids.
 - b. Receipt of bids after due date and time or by email/fax (unless specified otherwise).
 - c. Receipt of bids in open conditions.

7. If 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.
8. 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.
9. The lowest bid will be calculated based on the total price of all items tendered for Basic equipment along with accessories selected for installation, operation, preprocessing, and post-processing, optional items selected for installation, recommended spares, warranty.

6. Pre-requisites:

The bidder will provide the pre-requisite installation requirement of the equipment along with the technical bid.

7. Warranty:

The complete system is to be under a warranty period of a minimum of 3 years (year-wise breakup value should be shown in the commercial bid). The vendor should include the cost of any spares that are expected to be needed during the warranty period, including electronics, subcomponents, and software. Vendors can assume usage of 2000 hours/year for this calculation. If the instrument is found to be defective, it has to be replaced or rectified at the bidder's cost within 30 days from the date of receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended. The cost for the extension of the warranty beyond three years should be mentioned separately, which is an optional item

8. Buy Back:

CeNSE, IISc is seeking to replace the current FIB tool, which near the end of its useful life. CeNSE, IISc has Dual Beam FIB Helios NanoLab 600i (FEI) installed in 2011. The vendors are requested to include buyback offer (Optional) requested to include buyback offer (Optional)

9. 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 the tender 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 satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

10. Delivery, Installation and Training

1. The bidder shall provide the lead time to delivery, installation and made functional at IISc, Bangalore, from the date of receipt of a purchase order.
2. The system should be delivered, installed and made operational within 90 days from receipt of the purchase order.
3. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and inspection of all the items and features/capabilities tested by the IISc, Bangalore.
4. After successful installation, the handover date shall be the start of the warranty period.
5. No partial shipment is allowed.

6. The bidder should provide onsite application training for the local facility technologists and users.
7. The bidder should also arrange technical training for the local facility technologists and users.

11. Payment Terms:

1. 100% payments will be released after completion of delivery and satisfactory installation subject to TDS as per rules.
2. AMC cost (if ordered), after completion of the warranty period) will be released on a half-yearly basis at the end of each six months subject to satisfactory services.
3. Price basis must be on FOR-IISc Bangalore basis only.

10. 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.

11. 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.

12. 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. The bidder may visit the installation site before submission of tender, with prior intimation.
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

Item	Requirement	Indicate compliance	Information needed from Vendors
Electron Column			
Electron beam source	Schottky field emitter		
Electron beam Voltage range	350V or less- 30kV or more		Step size
Electron beam Current range	1 pA or less to 100 nA or more		Continuous/ stepped Step size
Monochromator (Optional)	A high-brightness electron source with new-generation monochromator to reduce the beam energy spread below 0.2 eV for beam currents up to 100 pA should be quoted as an optional item		
Electron beam Landing voltage	50 V or less to 30 kV or more		Methodology for deceleration
Magnification	800000 x or more		
Resolution	At optimum working distance and at accelerating voltage of a) 0.7 nm at 30 kV STEM or better b) 1.2 nm at 1 kV or better Best achievable resolution at accelerating voltage of a) 30/20 keV b) 15 keV c) 1keV d) better than 1.2 nm at all keV		Provide information, State working distance and all operational parameters, such as aperture size etc, probe current, probe size state for immersion lens if and non-immersion lens if applicable state detector configuration
Electron Beam probe size			Probe size vs probe current Continuous or stepped Step size
Electron beam current stability			Provide information
Magnetic samples	Strategies for magnetic field free imaging		Describe for information
Apertures, aperture sizes and insertion and retraction methods			Provide information
Image acquisition system:	Image acquisition size Bit depth Electronic Image shift Dynamic focus for stage tilt		Provide information

Scan features	Point and line scan Focus Window Image rotation, shift tilt compensation Scan speed		Provide description Range, stepped or continuous
Field of View	Maximum without distortion		State operation parameters
Ion column			
Ion source	Ga liquid metal ion source Source with 3000 μ amp lifetime / 3x1000 μ amp hours or more		
Ion beam voltage	2000 V or less to 30 kV or more		Stepped or continuous State step size if applicable
Ion beam current	1 pA or less to 60 nA or more		Stepped or continuous State step size if applicable
Ion beam resolution	3 nm at 30 kV or better		
Probe size			Provide minimum probe size Provide probe size vs current data
Ion beam profile	Circularity is necessary and very important. Significant deviation from circularity will be cause for disqualification		Provide tiff images at Combinations of high and low Probe currents and sizes on a Standard Si sample
Ion beam milling rate	for Si $\geq 0.25 \mu\text{m}^3/\text{nC}$		State operational parameters
SEM-FIB angle			For information
Magnification			For information
Working distance at dual beam coincidence point			For information
Ion beam apertures			Indicate sizes, movements and centering methodologies
Spatial resolution	At dual beam coincident point At accelerating voltages of 30 kV 5 nm or less		Indicate all operating conditions such as current, probe size, working distance, standard sample
Ion beam image acquisition size and performance	Image size and bit depth: Image shift:		provide information

Beam control	Rotating the ion beam raster in a 360-degree continuous fashion and shall have a function to reset this rotation to 0 degrees. Capable of reduced-raster, spot-mode, and line-scan ion-imaging modes Users should have the options to define raster trajectories, spot overlap and defocus values.		
IMAGING DETECTORS FOR ELECTRON AND ION BEAM COLUMNS			
Secondary electron detectors at various locations			
In column/lens Detector SE			
In column/lens Detector BSE (optional)			
In chamber IR camera			
Probe current measurement			
Retractable STEM detector	The retractable STEM detector enables scanning transmission imaging on thin samples in SEM		
In chamber Navigation camera	Navigation color optical camera can be used to take top-down images of samples for navigation		
TEM AND ATOM PROBE SAMPLE PREPARATION			
Requirements	In situ micromanipulator for transmission electron microscopy (TEM) lamella preparation with computer control, without operator intervention. Pneumatic insertion and retraction		
Micromanipulator performance	In situ manipulator with 4 (X, Y, Z, and R) degrees of freedom, including on-axis rotation		
	Manipulator should be with high precision, stability, and motorized needle rotation for easy preparation of ultra-thin TEM samples		

	Drift, vibration, repeatability		Provide information
GAS INJECTION SYSTEM & STAGE			
Requirements	A gas injection system with three injection modules enabling beam induced Pt, W and C deposition		
Stage	A stage with motorized axes with adequate degrees of free demo required for the accurate positioning of the needle in the working area. Motorised stage with X and Y movements 110 mm or greater, Z movement 10 mm or greater, rotation 360 degrees and tilt range: -10 to 60° or greater. Compeucentric rotation option should be available Automated nozzle positioning and angle Injection line must allow precise control over gas flow, and heating of individual lines The stage must be capable of depositing Finely spaced Nano sized deposits in arrays at spacing's of at least ¼ micron.		Provide detailed description
Stage (Optional)	A high-precision five-axis motorized stage with Piezo-driven X, Y and R axis should be quoted as an option		
Precursors	Standard reservoir for Pt, W and C (may be Au)		
SAMPLE STAGE AND HOLDER REQUIREMENTS			
Main chamber size			Provide information
Maximum sample size	Considering use of electron and ion column (at coincident point) and all necessary tilt angles for milling and other detector restrictions		Provide information
Stage performance	Stage movement comp centric rotation where stage rotation is accompanied by X and Y translation to maintain		Provide information on sample movement and rotation limits

	the same sample field of view during stage rotation.		
Holders	Standard holders Specialized holders with precise pre tilt angles suitable for imaging with BDSE/SE without sample movement are required.		Provide information on maximum /minimum sample dimensions, shape restrictions and weight restrictions for each holder
	The vendor will indicate the accuracy of and precision of such stage moments to enable precise return without backlash to original positions		
Ports	More than 20 available ports on chamber for future upgradation		Provide information
Vacuum System			
System description			Provide complete description of system in response
System requirements	Oil free system electron gun, accelerator region and any differential pumping chambers shall be continuously evacuated by ion pumps Column components and chambers below the electron gun and ion gun will be evacuated turbo molecular pumps or equivalent oil-free system. Mechanical pumps used to achieve rough vacuum levels will prevent back-streaming of oil into the vacuum system		
	Chamber vacuum		provide information
	Gun Vacuum		provide information
	FIB gun vacuum		provide information
	Pumping rate of main chamber		provide information
SUPPORTING SOFTWARES			
Ion Beam support Data	Files containing Ga beam etch rates for Most standard metals and alloys (viz., Fe, Ti, Ni, Cr, Si, Al, Steel, SiN, SiC		

	etc.) Must be present in the system		
Software supporting Stage holder movements for automated functions			
Software to write GDS files patterns on the sample			
Software to automate the TEM sample preparation			
Software supporting detector configurations that enhance analysis of SE, BSE and Ion Images.			
Free s/w upgrades for 10 years after equipment installation and acceptance			
Functional details of each software package			provide information
AUXILIARY EQUIPMENT			
The supplier will provide any auxiliary cooling required for equipment cooling such as water chillers			
SITE PREPARATION REQUIREMENTS			
The chosen supplier shall indicate all site requirements including those for stable equipment operation within one month of order placement			
It is the responsibility of IISc to ensure that the site meets with all specifications of the supplier in time for equipment installation			

Spares			
a) Spare FEG source			
b) Long-life Ga source			
c) Spare stubs – 100 no			

d) 45°, 70-degree pre-tilt holders (4nos. each)			
e) Supplier will, indicate any additional spares required for one-year trouble-free operation			

Section 5- Technical Bid

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

The Chairperson,

Attn: Dr. Suresha S J

Centre for Nano Science and Engineering

Indian Institute of Science

Bangalore – 560012, India

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	...				
3.	Accessories for operation and installation				
4.	All Consumables, spares and software to be supplied locally				
5.	Warranty (3 years)				
6.	Additional warranty beyond three years				
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 Chairperson,
Attn: Dr. Suresha S J
Centre for Nano Science and Engineering
Indian Institute of Science
Bangalore – 560012, India

Annexure – 1:

Declaration for acceptance of terms and conditions

To,
The Chairperson,
Centre for Nano Science and Engineering
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: XXXXXX
Dated: XXXX

Supply and installation of Focused Ion Beam at MNCF, CeNSE, IISc Bangalore
Sir,

I've 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'm 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 – 2:

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.

Annexure-3:

Declaration regarding track record

To,
The Chairperson,
Centre for Nano Science and Engineering
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: XXXXXXXX
Dated: XXXXX

Supply and installation Supply and installation of Focused Ion Beam at MNCF, CeNSE, IISc Bangalore
Sir,

I've carefully gone through the Terms & Conditions contained in the above-referred tender. I 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'm a 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: If the company/firm was blacklisted previously, please provide the details regarding the 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:

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: Declaration for acceptance of terms and conditions**
 - b. **Annexure 2: 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.