This is a Request for Quote (RFQ) from domestic (India-based) vendors for the supply of a Custom Bonder at CeNSE, IISc Bangalore.

Section 1 - Bid Schedule

1	Tender No	IISC-CeNSE-CB-01			
2	Tender Date	29 th September 2023			
3	Item Description	Supply of a Custom Bonder at 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	20 th October 2023			
7	For further clarification	Prof. Prosenjit Sen Centre for Nano Science and Engineering Indian Institute of Science, Bangalore 560012 Email: prosenjits@iisc.ac.in			

Section 2 – Eligibility Criteria

Prequalification criteria:

- 1. The Bidder's firm should have existed for at least 3 years. Bidders should enclose a self-declaration.
- The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their "local content" as defined by recent edits to GFR. The bidder should include a local content declaration as per – Annexure 6.
 - a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%
 - b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.
- 3. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.
- 4. The quotations should be on FOR-IISc Bangalore basis in INR only.
- 5. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.
- 6. Purchase preference as defined by the recent edits to GFR (within the "margin of purchase preference") will be given to the Class-1 supplier.
- 7. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.
- 8. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per -Annexure 4.
- The Bidder must not be blacklisted/banned/suspended or have a record of any servicerelated dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

Section 3 – Terms and Conditions

A) Submission of Tender:

- 1. All documentation in the tender should be in English.
- 2. Tenders should be submitted in two envelopes (a two-bid system).
 - a. Technical Bid (Part-A) Technical bid consisting of all technical details and 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 that they are given in the technical requirement below.
- II. The second column should provide instrument specifications against the requirement. Please provide quantitative responses wherever possible.
- III. 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.
- IV. The fourth column should state the reasons/explanations/context for deviations, if any.
- V. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify responses of previous columns, 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 the tender**, and other commercial terms and conditions.
- 3. The technical bid and price bid should be placed in **separate sealed covers**, superscribing on both the envelopes the tender description, 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 superscripted with the Tender No, Tender Description & Due Date.
- 4. The SEALED COVER should reach the 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 is a holiday, the tender will be accepted 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., should be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document.
- 7. If the price is not quoted in the Commercial Bid as per the format provided in the tender document, the bid is liable to be rejected.

- 8. The purchase committee reserves the right to accept or reject any bid and annul the bidding process and reject all bids at any time prior to the award of the contract without thereby 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 IISc purchase committee, in its sole discretion, unconditionally and without having to assign any reason, reserves the rights:

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

C) Validity of the Offer:

The offer shall be valid 90 Days from the commercial bid's opening date.

D) Evaluation of Offer:

- 1. The technical bid (Part A) will be opened first and evaluated.
- 2. Bidders meeting the required eligibility criteria 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 the decision in this regard shall be binding on the bidders.
- 4. The award of the contract 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 the due date and time 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 has accepted the clauses as of the tender, and no further claim will be entertained.
- 7. No revision of 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 for the basic equipment along with accessories selected for installation, operation, preprocessing and post-processing, optional items, recommended spares, warranty, and annual maintenance contract. The purchase committee is looking for the most cost-effective solution for obtaining a new tool. Vendors are encouraged to propose all avenues, including but not limited to buy back of the existing tool, turnkey upgrade of existing tool or purchase of a new tool.

E) Pre-requisites:

The bidder will provide the prerequisite installation requirement of the equipment along with the technical bid.

F) Warranty:

The complete system is to be under warranty for a minimum period of 3 years (year-wise breakup value should be shown in the commercial bid). The vendor should include the cost of any spares expected to be needed during the warranty period, including electronics, subcomponents, and software. If the instrument is defective, it has to be replaced or rectified at the bidder's cost within 30 days from receipt of written communications from IISc, Bangalore. If there is any delay in replacement or rectification, the warranty period should be extended.

G) Annual Maintenance Contract:

An annual maintenance contract for at least 3 years post-warranty should be provided as an optional item upon completion of the warranty period.

The AMC costs will not be considered for classifying the vendor's domestic nature (class 1 or class 2) (see eligibility criteria in section 2).

H) SPARES:

Vendors must provide a detailed list of spares and a user manual with a detailed Bill of Materials for all Parts. It should include the Spares Column with the Manufacturer part Number, Qty, and availability of stock after 3 Years.

I) Purchase Order:

The quantity of the items in the tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.

If the product and service quality is not found satisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

J) Delivery, Installation, and Training:

The bidder shall provide the lead time to delivery, installation, and made functional at IISc, Bangalore, from the date of receipt of the purchase order. The system should be delivered, installed, and made functional within 120 days from receipt of purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and the inspection of all the items and features/capabilities tested by the IISc, Bangalore. For acceptance, the vendor must demonstrate the technical specifications mentioned in the tender. After successful installation and inspection, the date of taking over of the entire system by the IISc, Bangalore, shall be taken as the start of the warranty period. No partial shipment is allowed.

The bidder should also arrange for technical training for the local facility technologists and users.

K) Payment Terms:

100% payments (except AMC) will be released after completion delivery, satisfactory installation, and qualification, subject to TDS as per rules. 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. The price basis must be on FOR-IISc Bangalore basis only. As per GFR no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.

L) Statutory Variation:

Any statutory increase in the taxes and duties subsequent to the 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.

M) Disputes and Jurisdiction:

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

N) General:

1. All amendments, time extensions, clarifications, etc., within the tender's submission period will be communicated electronically. No extension of the bid due date/time shall be considered due to delay in receipt of any document(s) by mail.

- 2. The bidder may furnish any additional information which is necessary to establish capabilities to complete the envisaged work successfully. It is, however, advised not to furnish superfluous information.
- 3. With prior intimation, the bidder may visit the installation site before tender submission.
- 4. Any information furnished by the bidder found to be incorrect, immediately or later, would render the bidder liable to be debarred from tendering/taking up work in IISc, Bangalore.

Section 4 – Technical Specifications

Scope of Work

The scope of this work is to develop a custom environment controlled anodic bonder. The schematic is shown in Figure 1. The system consists of

- 1. Gas flow and vacuum system
- 2. Bonder chamber with stages and push-pull feedthroughs
- 3. Electrical system with computer control for
 - a. Control the vacuum and gas flow system.
 - b. Control temperature of the bonding stage.
 - c. Apply voltage for anodic bonding.

The bonder chamber will be installed in a glove box (enclosure). The gas system, the electrical system and computer control will be outside the glove box (enclosure). **The glove box is not in the current scope.** Adequate KF40 feedthroughs will be provided in the glove box (enclosure).

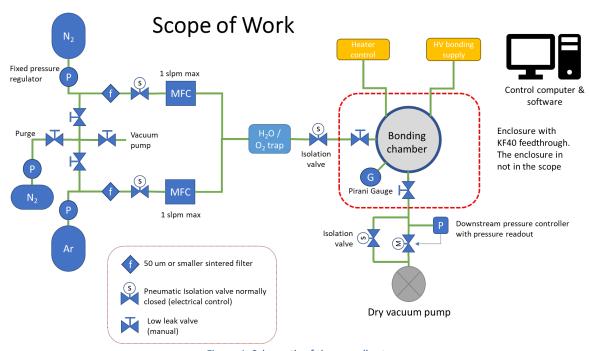


Figure 1: Schematic of the overall setup

The detailed schematic of the bonder system is shown in Figure 2. The bonder chamber will allow anodic bonding of a glass coverslip on a silicon device. The coverslip will be separated from the device using a flag which can be moved using a manual push-pull actuator. The bias pin comes from the top and is actuated using a manual push-pull actuator. The chips are placed on a heater stage with temperature control. The stage height is adjustable. The stage and the chamber are electrically grounded. The stage is thermally and electrically isolated from the chamber.

The bonding process is as follows.

- Camber Evacuation
 - Position the device and the glass coverslip with flag in position before closing the chamber.
 - Evacuate to < 0.1 mbar.
- Open the MFC's
 - MFC ratio determines gas composition (Ar + N₂).
 - Chamber pressure increased to 10 250 mbar while maintaining the gas flow ratio.
 - Hold flow to ensure chamber environment reaches the required pressure and gas composition.
- · Prepare for bonding
 - Remove the flag (spacer) using the manual push-pull feedthrough.
 - Push the top chip with the bias pin using the manual push-pull feedthrough.
- Bonding 1
 - Increase temperature to 200°C.
 - Apply intermediate voltage (-0.5 to 1 kV).
- Bonding 2
 - Increase pressure to 500 mbar.
 - Apply high voltage (-2 to -3 kV) till bonding completes.
- · End process
 - Reduce voltage to 0 V.
 - Purge chamber with N₂.
 - Wait for chuck to cool down.

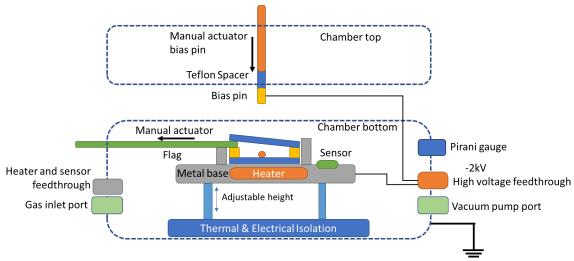


Figure 2: Schematic of the bonder chamber

The 3D schematic of the bonder chamber is shown below.

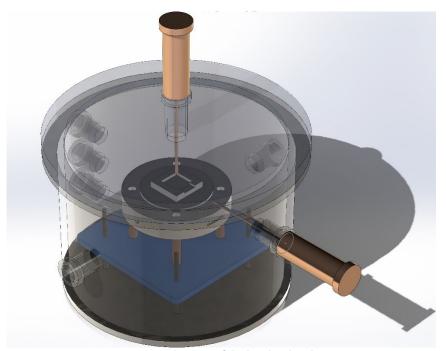


Figure 3: 3D schematic of the bonder chamber

Specification for the gas flow and vacuum system
The schematic of the system is shown in Figure 1. The specification of the individual elements of the gas flow system are

SI. No.	Item	Required Specification	Compliance (Yes / No)	Remarks
1	Capability to control chamber pressure with gas flow	1 mbar to 500 mbar		
2	Gas composition in the chamber	Ar + N ₂ (programable ratio)		
3	Mass flow	SEMI standard		
	controllers	Computer control		
		Full range: 1 slpm		
		Control range: 1% to 100% of		
		full scale, or better		
		Accuracy: ± (0.8% of Reading + 0.2% of full scale) or better		
		Repeatability ±0.2% of full		
		scale, or better		
4	Particle filters	50 µm or smaller sintered		
		filters in each gas line		
5	Manual valves	Low leak vacuum compatible		
		valves		
6	Isolation valves	Electric controlled pneumatic		
		valve with low leakage and high		
		durability		
		Computer control		
7	Pressure controller	Full range: 1000 mbar		
		Control range: 0.5% to 100% of		
		full range		
		Accuracy: 0.5% of full scale		
		Computer control with		
8	Vacuum numn	pressure readout		
0	Vacuum pump	Completely dry oil free pump		
		Base pressure better than 0.1 mbar		
		No-return valve with		
		hermetically sealed pumping		
		system		
9	H ₂ O + O ₂ trap	Remove H ₂ O + O ₂ and other		
		contaminants in carrier gas		
		Maximum flow rate: 500 ml /		
		min or more		
		Outlet purity (assuming		
		99.995% inlet purity): better		
		than 99.9999%		

10	Pirani gauge	Measuring range 10 ⁻³ to 10 ³	
		mbar or better	
		Accuracy ± 10% or better in the	
		range of 10 ⁻² to 10 mbar	

Specification for the bonder chamber with stage and push-pull feedthroughs

SI. No.	Item	Required Specification	Compliance (Yes / No)	Remarks
1	Material	Steel, Teflon and Ceramics (preferred). Other possible		
		material is anodized aluminum.		
2	Chip holder	To be fabricated as per design to be discussed later		
3	Base plate	Diameter 150 mm		
	·	100 mm grove to allow full wafers		
		At least 30 mm thick		
		Integrated heater and		
		temperature controller for		
		heating up to 250°C		
		Electrically grounded		
		Electrically and thermally		
		isolated to the main chamber		
		Height adjustment 100 mm		
		resolution 0.1 mm		
5	Chamber	Height 20 cm or less		
		Inner diameter 40 cm or less		
		Appropriate feedthroughs for		
		gas, electrical and manual		
		push-pull actuator		
6	Lid	Viewport		
		Hinge or other mechanism for		
		easy opening		
		Appropriate feedthrough for		
		electrical and manual push-pull		
		actuator		
7	Manual push-pull actuator	Travel range: 20 mm or more		
		Low leak vacuum compatible		
		feedthrough actuator		

Specification for electrical control system

SI. No.	Item	Required Specification	Compliance (Yes / No)	Remarks
1	Computer control	Computer control from a unified software a. Gas flow and pressure control system, b. Heater stage temperature control c. Anodic bonding voltage control		
2	High voltage power supply	Maximum voltage: -3kV Maximum current: 1 mA or better Remote control using computer Local operation Capability to monitor current Spark protection Short circuit protection		
3	Stage heater and controller	Temperature control from RT to 250°C Accuracy ±3 °C Programable temperature control with readout Local control Heater supply voltage and current readout (optional)		

Section 5- Technical Bid

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

The Chairperson,
Attn: Prof. Prosenjit Sen
Centre for Nano Science and Engineering
Indian Institute of Science
Bangalore – 560012, India

Annexure-1:

Details of the Bidder

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

Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach an 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 Chairperson,
Centre for Nanoscience and Engineering,
Indian Institute of Science,
Bangalore – 560012, India

Ref: Tender No: XXXXXXXXX

Dated: XXXXX

Dear Sir/Madam

I've carefully reviewed the Terms & Conditions in the above-referred tender. I hereby declare that my company/firm has ------years of experience in building, supplying and installing vacuum processing equipment.

(Signature of the Bidder) Printed Name Designation, Seal Date:

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: XXXXXXX

Dated: XXXXX

Dear Sir/Madam,

I've carefully reviewed the Terms & Conditions 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'm a competent officer in my company/firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the	Blacklisted/debarred by	Reason	Since when and
	company is Debarred	Government / Semi-		for how long
	/blacklisted / case is	Government/Organizations		, and the second
	Pending	/Institutions		
	3			

(NOTE: In case 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:

Annexure – 4:

Declaration for	or 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

Dear Sir/Madam,

I've carefully reviewed the Terms & Conditions 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 – 5:

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 the technical bid.
- 3. Bidders should clearly indicate compliance or non-compliance with the technical specifications provided in the tender document.

Annexure – 6:

*(To be submitted In the company letter head by supplier)

Declaration of Local Content by Local supplier

Subject: Public Procurement (Preference to Make In India)

References:

Preference to Make in India including counter offering will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following links https://dipp.gov.in/public-procurements

http://dipp.nic.in/sites/default/files/publicProcurement MakeinIndia 15June2017.pdf
http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017 28052018.pdf
https://dipp.gov.in/sites/default/files/PPP-MII%20Order%20dt%2029th%20May%2019 0.pdf
https://dipp.gov.in/sites/default/files/PPP%20MII%20Order%20dated%204th%20June%202020.pdf

https://dipp.gov.in/sites/default/files/PPP-MII%20Order%20dt%2029th%20May%2019_0.pd
nttps://dipp.gov.in/sites/default/files/PPP%20MII%20Order%20dated%204th%20June%2020
We hereby declare with reference to above subject and references that
M/s(Tick whichever is applicable as below)
"Class-I local supplier" meeting the requirement of minimum local content equal to 50% (fifty percent) or more defined in the above government notification for the goods and services (or) "Class-II local Supplier" meeting the requirement of local content 20% to less than 50%
(fifty percent) defined in the above government notification for the goods and services
(or)
Non Local supplier (If not belonging to Class-I & Class-II)
Please mention the details against the following:
Enquiry no: dated
Type of Supplier (Class-I/Class-II)
Product:
Project:
Details of location at which local value addition will be made is as follows:
We also understand that the false declarations will be in breach of the code of Integrity under rule 175(1)(i)(h) of the General financial rules for which a bidder or its successors can be debarred for up to two years as per Rule 151(iii) of the General Financial Rules along with such other actions as may be permissible under law.
Authorized Signature M/s(Signature and seal)
Place:
Date:

Section 6 - Commercial Bid

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

Addressed to

The Chairperson,
Attn: Prof. Prosenjit Sen
Centre for Nano Science and Engineering Indian
Institute of Science
Bangalore – 560012, India

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.	AMC 3 years beyond warranty				

Any additional items such as Spares and Hardware/PCB'S Likely to going Obsolete after the next 3 Years

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

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 Envelope "B": Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: **Technical Bid (Envelope A) and Commercial Bid (Envelope B)** superscribing on both the envelopes with, Tender description, 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.