

	<p>भारतीय प्रौद्योगिकीसंस्थानमद्रासचेन्ने 600 036 INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036 भंडार एवं क्रय अनुभाग STORES & PURCHASE SECTION Email: adstores@iitm.ac.in दूरभाष: (044) 2257 8285 / 8287 / 8288 / 8290 फॅक्स: (044) 2257 8082 Telephone : (044) 2257 8285/8287/8288/8290 FAX: (044) 2257 8082 GSTIN: 33AAAAI3615G1Z6</p>	
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P.K. SHEBA SABARI
Assistant Registrar (Stores & Purchase)

Date: 01.03.2024

Tender No. IITM/SPS/FIB-SEM/042/GTE/2023-24/SPL

Due Date 07.03.2024
Before 02.00 p.m.

Dear Sirs,

On behalf of the Indian Institute of Technology Madras, Tenders are invited in two bid system, namely technical and financial bids for:

Dual Beam Focused Ion Beam Facility

Conforming to the specifications enclosed.

Tender Documents may be downloaded from Central Public Procurement Portal <https://etenders.gov.in/eprocure/app>. Aspiring Bidders who have not enrolled / registered in e-procurement should enroll/register before participating through the website <https://etenders.gov.in/eprocure/app>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at "Help for contractors". [Special instructions to the bidders for the e-submission of the bids online through this e-Procurement Portal"].

Tenderers can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type 'IIT'. Thereafter, Click on "GO" button to view all IIT Madras tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <https://etenders.gov.in/eprocure/app> as per the schedule attached.

No manual bids will be accepted. All tender documents including Bidder Eligibility Criteria, Technical and Financial bids should be submitted in the E-procurement portal.

1	LAST DATE for receipt of Tender Date & Time of opening of Tender	: 07.03.2024 before 02.00 p.m. : 11.03.2024 @ 02.30 p.m.
GUIDELINES FOR TENDER SUBMISSION IN CENTRAL PUBLIC PROCUREMENT PORTAL (E-PROCUREMENT MODE)		
A	निविदा की प्रस्तुति /Submission of Tender	<ul style="list-style-type: none"> As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal URL: https://etenders.gov.in/eprocure/app The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal More information useful for submitting online bids on the CPP Portal may be obtained at: https://etenders.gov.in/eprocure/app All tender documents including Technical Bid & Financial Bid should be submitted separately in online CPP portal as per the specified format only. Right is reserved to ignore any tender which fails to comply with the above instructions. No manual bid submission will be entertained.

B	ऑनलाइन बोली जमा के अनुदेश / Instructions for online bid submission	<p>REGISTRATION</p> <ul style="list-style-type: none"> Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal URL: https://etenders.gov.in/eprocure/app by clicking on "Online Bidder Enrollment". Enrolment on the CPP Portal is free of charge. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts. 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. 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 and etc.)https://eprocure.gov.in/eprocure/app with their profile. 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. Bidder then may log in to the site through the secured log-in by entering their user ID / password and the password of the DSC / eToken.
C	निविदा दस्तावेज़ की खोज / Searching for tender documents	<ul style="list-style-type: none"> 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. 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 Tender" folder. This would enable the CPP Portal to intimate the bidders through SMS / email in case there is any corrigendum issued to the tender document. 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.
D	बोली की तैयारी / Preparation of bids	<ul style="list-style-type: none"> Bidder should take into account any corrigendum published on the tender document before submitting their bids. 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. Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender document / schedule and generally shall be in PDF / XLS formats as the case may be. Bid documents may be scanned with 100 dpi with black and white option. 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, GSTIN Details, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Documents" area available to them to upload such documents. These documents may be directly submitted from the "My Documents" 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.
E	बोली की प्रस्तुति / Submission of bids	:	<ul style="list-style-type: none"> • Bidder should log into the site well in advance for bid submission so that he/she can upload the bid in time i.e. on or before the bid submission date and time. Bidder will be responsible for any delay due to other issues. • The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document. • Bidder has to transfer the EMD as applicable by online mode only. The EMD should be transferred on or before the closure date and time of the tender. If the EMD is not transferred before the closure date and time, the tender will be summarily rejected. The proof of transfer has to be submitted in the Technical Bid, Otherwise, the tender will be summarily rejected. • A standard BOQ format has been provided in Annexure-C 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 detail with their respective financial quotes and other details (such as name of the bidder). If the BOQ file is found to be modified by the bidder, the bid will be rejected. • 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. • The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders due to local issues. • The uploaded tender documents become readable only after the tender opening by the authorized bid openers. • 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. • Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.
F	बोलीदाताओं के लिए सहायता /Assistance to bidders	:	<ul style="list-style-type: none"> • 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. • 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 [0120-4200462, 0120-4001002, 0120-4001005]
G	बोलीदाताओं के लिए सामान्य अनुदेश / General Instructions to the Bidders	:	<ul style="list-style-type: none"> • The tenders will be received online through portal https://etenders.gov.in/eprocure/app. In the Technical Bids, the bidders are required to upload all the documents in single pdf file. • 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://etenders.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://etenders.gov.in/eprocure/app under the "Information about DSC".

H	बयाना जमा ईएमडी Earnest Money Deposit (EMD)	<p>i. EMD of INR 27,00,000/- (Rupees Twenty Seven Lakh only) should be transferred through NEFT/RTGS to the following bank account on or before due date 07.03.2024 before 2:00 p.m. Name : Registrar IIT Madras Bank : State Bank of India Account No. : 10620824305 Branch : IIT MADRAS IFSC CODE : SBIN0001055</p> <p>ii. As per O.M. No.F.1/2/2022-PPD Dated 01.04.2022, the EMD will be returned to unsuccessful Bidder(s), within 30 days after declaration of result of first stage i.e. technical evaluation etc., The EMD shall be forfeited if any Bidder withdraws the offer before finalization of the tender.</p> <p>iii. The EMD amount should not be sent through DD.</p> <p>iv. Non-submission of EMD details on or before the due date and time will result in rejection of the e-bid.</p> <p>v. As per Rule 170 of GFR 2017, exemption of EMD will be given subject to submission of undertaking by the firm seeking such exemption. Copies of relevant orders/ documents regarding such exemption should be submitted along with the tender document</p> <p>vi. The successful bidder shall submit a Performance Guarantee of 3% of the purchase order value by way of DD/Bank Guarantee (Including e-Bank Guarantee)/FDR/ Insurance surety bonds in favour of "The Registrar, IIT Madras" to be obtained from any commercial bank, within 14 (Fourteen) days from the date of issue of order by IIT Madras, which would be released 60 days after the successful completion of the warranty period after the adjustment dues if any without interest.</p> <p>vii. In case of successful bidder, the EMD will be adjusted towards the Performance Guarantee on request, subject to validity.</p> <p>viii. The amount of EMD is liable to be forfeited if the bidder withdraws the offers after submission of the tender or after the occupation of the offer and fails to remit the Performance Guarantee.</p>
I	तकनीकी बोली पर मार्किंग /Marking on Technical Bid	<p>i. The Bidder Eligibility Criteria – I & II, technical specification of the item for this tender is given in Annexure A. The Bidders shall go through the Bidder Eligibility Criteria – I & II, Technical Specification and submit the technical bid in the proforma given in Annexure B in the tender document along with the supporting documents.</p> <p>ii. The Technical bid should be submitted in pdf format only through online (e-tender). No manual submission of bid will be entertained.</p> <p>iii. The technical bid should have the page-wise heading as "Technical Bid" and page no. in all pages with seal and signature of authorized signatory. The total no. of pages should be mentioned at the last page of the documents.</p> <p>iv. The technical bid should consist of a) Document proof for EMD payment b) Technical Compliance sheet as per proforma given in Annexure –B c) Document proof for Bidder eligibility criteria I & II, technical details along with catalogue / brochure and other technical, commercial terms and conditions.</p>
J	वित्तीय बोली पर मार्किंग Marking on Financial Bid	<p>Financial bid (BOQ) should be submitted in the prescribed format given in Annexure- C in xls format through e-tender only. No manual or other form of submission of Financial Bid will be entertained.</p>

निविदा के निबंधन व शर्तें TERMS AND CONDITIONS OF TENDER	
1.	<p>निविदा की तैयारी Preparation of Tender:</p> <ul style="list-style-type: none"> The bids should be submitted through online only in two bid system i.e. Technical Bid and Financial Bid separately. The bidder has to submit the tender document duly signed on all pages by an authorized person and his / her full name and status shall be indicated below the signature along with official seal/stamp of the firm. Submission of wrong / forged information / document will be liable to legal action, and rejection of the bid submitted by the firm. The bids of the agency/firm/company not in possession of valid statutory license / registrations are liable for rejection. If any relative of the bidder is an employee of the IIT Madras, the name, designation and relationship of such employee shall be intimated to the Registrar, IIT Madras in writing while submitting the bid. No bidder will be allowed to withdraw / alter / modify the bid during the bid validity period.
2.	<p>निविदा पर हस्ताक्षर Signing of Tender:</p> <ul style="list-style-type: none"> The Tender is liable to be rejected if complete information is not given therein or if the particulars and date (if any) asked for in the schedule to the Tender are not fully filled in or not duly signed/authenticated. Specific attention is drawn to the delivery dates and terms and conditions enclosed herewith. Each page of the bids required to be signed and bears the official seal of the Bidders. If the bid is submitted by a firm in partnership, it shall be signed (with seal) by all the partners of the firm above their full typewritten names and current addresses or alternatively by a partner holding power of attorney for the firm in which case a certified copy of the power of attorney shall accompany the application. A certified copy of the partnership deed along with current addresses of all the partners of the firm shall also accompany the application. If a limited company or a corporation makes the application, it shall be signed by a duly authorized person holding power of attorney for signing the application, in which case a certified copy of the power of attorney shall accompany the application. Such limited company or corporation may be required to furnish satisfactory evidence of its existence. The bidder shall also furnish a copy of the Memorandum of Articles of association duly attested by a Notary Public.
3.	<p>वह अवधि जिसके लिए ऑफर खुला रहेगा Period for which the offer will remain open: The Tender shall remain open for acceptance/validity till: 120 days from the date of opening of the tender. However, the day up to which the offer is to remain open being declared closed holiday for the Indian Institute of Technology Madras, the offer shall remain open for acceptance till the next working day.</p>
4.	<p>कीमत Prices:</p> <ul style="list-style-type: none"> The prices quoted should be Nett considering all terms & conditions and as per the technical specification mentioned in Annexure A. The prices quoted by the bidder should be inclusive of Training, Installation, Transportation, GST and other Charges. All conditional tenders will be summarily rejected.
5.	<ul style="list-style-type: none"> भुगतान टीमें Payment terms : Import: Letter of Credit (90% against shipping documents and 10% against installation) Local: 90% against delivery at site and 10% after installation. Advance if any required may be considered against the request of successful vendor by submitting equivalent amount of BG in addition to Performance Security Deposit.
6.	<p>सुपुर्दगी Delivery: The delivery period shall be 12 – 14 months from the date of issue of purchase order. No further extension of time will be allowed. Non delivery of items will lead to cancellation of Purchase Order without any notice.</p>

7.	वारंटी Warranty: Warranty (from the date of full installation) for 5 years along with free software upgrades for the entire systems including all the attachments.
8.	Standards: Standard samples to be provided for SEM-EDS-EBSD
9.	Essential Accessories : a) Vibration and noise free chiller b) Compressor for pneumatic systems of the microscope
10.	Operation & maintenance manuals: Soft copy of the operation & maintenance manuals should be provided.
11.	Pre-installation requirement (Civil & Electrical EMI and gas, etc.) Should be mentioned along with offer. Free survey of vibration and EMI at site and provide the results of the survey and the necessary modifications if required for achieving best results
12.	Installation & Training : Onsite installation, demonstration of all specification quoted. Training for 5 persons in the operation of the FESEM-EDS-EBSD for 5 days.
13.	Availability of spares parts : The vendor has to guarantee that all the spares parts for the offered FESEM and attachments will be available for at least next 10 years. (Appendix – A)
14.	निबंधन व शर्तें Terms and Conditions: Failure to comply with any of the instructions stated in this document or offering unsatisfactory explanations for non-compliance will likely lead to rejection of offers.
15.	स्वीकृति का अधिकार Right of Acceptance: IIT Madras reserves the right to reject the whole or any part of the Tender without assigning any reason or to accept them in part or full.
16.	स्वीकृति की सूचना Communication of Acceptance: Letter of Intimation and acceptance will be communicated by post /email to the successful bidder to the address indicated in the bid.
17.	All information including selection and rejection of technical or financial bids of the prospective bidders will be communicated through CPP portal. In terms of Rule 173(iv) of General Financial Rule 2017, the bidder shall be at liberty to question the bidding conditions, bidding process and/or rejection of bids.
18.	बोलीदाता को इस नि वदा के साथ जमा करना होगा Bidder shall submit along with this Tender: Name and full address of the Banker and their swift code and PAN No. and GSTIN number.
19.	क्षेत्राधिकार Jurisdiction: All questions, disputes, or differences arising under, out of or in connection with the contract, if concluded, shall be subject to the exclusive jurisdiction at the place from which the acceptance of Tender is issued.
20.	Right of IIT Madras <ul style="list-style-type: none"> • The Registrar, IIT Madras reserves right to withdraw / relax any of the terms and conditions mentioned above so as to overcome the problem encountered by the contracting parties. • The Registrar, IIT Madras reserves the right to accept or reject any or all the tenders without assigning any reason whatsoever and his / her decision shall be final and binding on the tenderer. • IIT Madras reserves the right to suitably increase / reduce the scope of supply put to this tender. In case of any ambiguity in the interpretation of any of the clauses in tender document or purchase order, interpretation of the clauses by the IIT Madras shall be final and binding on all parties.

21.	<p>जुर्माना परिसमापन क्षति Penalty & Liquidated Damages / Force Majeure:</p> <ul style="list-style-type: none"> • If the selected Bidder fails to complete the due performance of the contract in accordance with the terms and conditions, Institute reserves the right either to cancel the contract or to accept performance already made by the selected Bidder after imposing Penalty on Selected Bidder. A penalty will be calculated on a per week basis and on the same Rate as applicable to Liquidated Damages (LD). In case of termination of the contract, Institute reserves the right to recover an amount equal to 5% of the Contract value as Liquidated Damages for non-performance. • Both Penalty and Liquidated Damages are independent of each other and are applied separately and concurrently. Penalty and LD are not applicable for reasons attributable to the Institute and Force Majeure. However, it is the responsibility of the selected Bidder to prove that the delay is attributable to the Institute and Force Majeure. The selected Bidder shall submit the proof authenticated by the Bidder and Institute's official that the delay is attributed to the Institute and/or Force Majeure along with the bills requesting payment.
22.	<p>The bidder shall certify that the tender document submitted by him / her are of the same replica of the tender document as published by IIT Madras and no corrections, additions and alterations made to the same. If any deviation found in the same at any stage and date, the bid / contract will be rejected / terminated and actions will be initiated as per the terms and conditions.</p>
23.	<p>The bidder shall study the tender document, Bidder Eligibility criteria and technical specification in detail as given in Annexure A before submitting the bid.</p>
24.	<p>बोलीदाता पात्रता मानदंड Bidder Eligibility Criteria:</p> <ol style="list-style-type: none"> The bidder shall not be from a country sharing land border with India and if the bidder is from a country sharing land border with India the bidder should have been registered with the competent authority as per orders of DIPP OM No. F. No. 6/18/2019-PPD dated 23rd July 2020, and MoCI Order No. P-45021/112/2020-PP (BE II) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in Annexure – D. Neither the tender participating firm nor any of its partner has been blacklisted / debarred /involved / convicted in any criminal case / economic offence nor any criminal case / economic offence is pending against firm or any partner of the Firm before any Court of Law / Police. A self-declaration format given in Annexure – E. The firm must have an aggregate financial turnover of at least Rs.720 Lakhs in the last 5 years i.e. 2018-19,2019-20,2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant) The bidder should be an OEM or authorized supplier of OEM. Necessary OEM certificate / OEM authorization letter for this particular tender should be submitted by the bidder as given in Annexure-F. The bidder should have a service centre in Chennai for service support. Proof of service centre in Chennai should be furnished as documentary evidence (such as valid rental agreement/GST Certificate/ Certificate of incorporation etc.) The bidder should have 10 years experience in supply of Dual Beam Focused Ion Beam Facility (similar to the tendered item) to the reputed Institutions like IIT/NIT/ Central or State Government / Central Research Labs / R&D units/ IISc, IISERs in India and should have supplied atleast :- Three(3) similar contracts each costing not less than Rs. 360 Lakhs; (or) Two(2) similar contracts each costing not less than Rs. 540 Lakhs; (or) One(1) similar contract not costing less than Rs. 720 Lakhs Copies of the document listed below should be submitted as a proof for the above work experience: <ol style="list-style-type: none"> Work Order / Purchase Order should be submitted and also the list of instruments supplied including contact details (name of the person-in-charge, email, and phone number) should be provided. Work Completion Certificate/or User performance Certificate from End User
25.	<p>बोलियों की संख्या और उनका प्रस्तुतीकरण Number of Bids and their Submission:</p>

	<p>Bids should be submitted in CPP portal. Two bid system should be followed as detailed below:</p> <p>Bid I Technical Bid</p> <ul style="list-style-type: none"> The bidder should go through the Bidder Eligibility Criteria and Technical Specification given in Annexure-A of the tender document, understand the requirement of IITM and submit their technical bid along with all relevant document proof in the proforma given in Annexure-B. Any tender documents without these shall be invalid and rejected. The technical bid should consist of proof of EMD transfer, Bidder Eligibility Criteria, Technical specification and compliance sheet (proforma given in Annexure – B) along with all relevant documents proof. <p>Bid II Financial Bid</p> <ul style="list-style-type: none"> Financial bid should be submitted only in CPP Portal as per Proforma for Financial bid format given in Annexure (C). No manual or other form of submission of Financial bid will be entertained. The Quoted price should be for supply, installation, transportation, loading and unloading of the item and inclusive of all cost at IIT Madras.
26.	<p>बोलियों का मूल्यांकन / Evaluation of Bids: Bid Evaluation will take place in two stages.</p> <p>Stage I: Technical Bid evaluation:</p> <ol style="list-style-type: none"> In the 1st stage, the Bidder will be evaluated first for conformity with Bidder Eligibility Criteria and those bidders who have complied with this criteria will alone be evaluated further. In the 2nd stage, the Technical Specification offered by the bidders will be evaluated by the technical committee for compliance. Only those bidders who have fully complied with Bidder Eligibility Criteria and Technical Specification will be considered for financial bid evaluation. <p>Stage II: Financial Bid Evaluation:</p> <p>The Lowest financial bid among those who have qualified in the Technical bid will be declared as successful bidder (L1) and the order will be awarded to successful bidder (L1). Financial bid prices expressed in multi-currency (INR / USD / EUR) shall be converted to INR as per the prevailing RBI exchange rate on the date of opening of Financial bid.</p>
27.	<p>'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P45021/2/2017-PP (BE II) dated 16th September 2020 and other subsequent orders issued therein, shall be eligible to bid in this tender. Declaration for Class-I / Class-II local suppliers should be submitted in the prescribed proforma format as per Annexure – G.</p>
28.	<p>सफल बोलीदाता का चयन और आदेश प्रदान करना Selection of successful bidder and Award of Order: The order will be directly awarded to the technically qualified bidder as per the condition in para 3A of DIPP, MoCI Order No. 45021/2/2017-PP (BE) dated 16th September 2020 and other subsequent orders issued therein.</p>
29.	<p>The bidders will not be entertained to participate in opening of Bids. Since the tender is e-tender, the opening of the bids may be checked using the respective logins of the bidders.</p>
30.	<p>In accordance to the Rule 173 of GFR, 2017 and relevant provisions thereof in Procurement Manuals, 2022, IITM reserves the right to carry out the negotiation process through its purchase/technical committee with L1/H1 (as applicable) vendor to ensure price reasonability before final recommendation to the Competent Authority. The negotiation details, if any, on case to case basis shall be recorded in minutes of meeting suitably for records.</p>

Sd/-
Assistant Registrar
Stores & Purchase

ACKNOWLEDGEMENT

It is hereby acknowledged that I/We have gone through all the points listed under “Bidder Eligibility Criteria, Technical Specification and Terms & Conditions” of tender document, the same is abided and agreed to be executed. In case, if any of the information furnished by me/us is found false, I/We are fully aware that the tender /contract will be rejected / cancelled by IIT Madras & EMD shall be forfeited.

**Signature of the Bidder
Name & Address of the
Bidder with Office Stamp**

SCHEDULE OF TENDER

Supply of Dual Beam Focused Ion Beam Facility

Tender No. IITM/SPS/FIB-SEM /042/GTE/2023-24/SPL

Name of Organization	Indian Institute of Technology Madras
Tender Type (Open/Limited/EOI/Auction/Single)	OPEN
Tender Category (Services/Goods/Works)	Goods
Type/Form of Contract (Work/Supply/Auction/ Service/ Buy/ Empanelment/ Sell)	Supply
Name of the Supply	Supply of Dual Beam Focused Ion Beam Facility
Source of Fund (Institute/Project)	IIT Madras
Is Multi Currency Allowed	No
Date of Issue/Publishing	01.03.2024
Document Download Start Date	01.03.2024
Document Download End Date	07.03.2024
Bid Submission Start Date	01.03.2024
Last Date and Time for Uploading of Bids	07.03.2024 @ 02.00 p.m.
Date and Time of Tender Opening	11.03.2024 @ 2.30 p.m.
No. of Covers (1/2/3/4)	2
Bid Validity days (180/120/90/60/30)	120 Days
Address for Communication	<p><u>For Technical Queries:</u> Prof. S. Sankaran Professor, Metallurgical & Materials Department, IIT Madras Chennai - 600 036. Phone No: 044- 2257- 4776 Email: ssabkaran@smail.iitm.ac.in</p> <p><u>For General Queries:</u> The Assistant Registrar Stores & Purchase Section IIT Madras Chennai – 600 036 Email : adstores@iitm.ac.in Contact No. 044- 2257 8287/8288/8290/8285</p>

**Supply of Dual Beam Focused Ion Beam Facility
Tender No. IITM/SPS/FIB-SEM/042/GTE/2023-24/SPL**

बोलीदाता पात्रता मानदंड Bidder Eligibility Criteria:

- I. The bidder shall not be from a country sharing land border with India and if the bidder is from a country sharing land border with India the bidder should have been registered with the competent authority as per orders of DIPP OM No. F. No. 6/18/2019-PPD dated 23rd July 2020, and MoCI Order No. P-45021/112/2020-PP (BE II) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in **Annexure – D**.
- II. Neither the tender participating firm nor any of its partner has been blacklisted / debarred /involved / convicted in any criminal case / economic offence nor any criminal case / economic offence is pending against firm or any partner of the Firm before any Court of Law / Police. A self-declaration format given in **Annexure – E**.
- III. The firm must have an aggregate financial turnover of at least Rs.720 Lakhs in the last 5 years i.e. 2018-19, 2019-20, 2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant)
- IV. The bidder should be an OEM or authorized supplier of OEM. Necessary OEM certificate / OEM authorization letter for this particular tender should be submitted by the bidder as given in **Annexure-F**.
- V. 10 Years of experience required in handling the equipment by the bidder.
- vi. The bidder should have a service centre in Chennai for service support. Proof of service centre in Chennai should be furnished as documentary evidence (such as valid rental agreement/GST Certificate/ Certificate of incorporation etc.)
- vii. The bidder should have 10 years experience in supply of Dual Beam focused Ion Beam Facility (similar to the tendered item) and should have supplied the item to the reputed Institutions (like IIT,NIT and Central/State University/Central Research Labs)/ R&D Units in India as detailed below:

Three(3) similar contracts each costing not less than Rs. 720 Lakhs;
(Or)
Two(2) similar contracts each costing not less than Rs. 540 Lakhs;
(Or)
One(1) similar contract not costing less than Rs. 360 Lakhs

Copies of the document listed below should be submitted as a proof for the above work experience:

- a. Work Order Purchase Order should be submitted and also the list of instruments supplied including contact details (name of the person-in-charge, email, and phone number) should be provided.
- b. Work Completion Certificate/or User performance Certificate from End User

TECHNICAL SPECIFICATION:

A. Electron Beam Column:

Sl. No.	Features	Specifications
1.	Electron Source	Thermal Schottky Field-emitter. Source life time should be guaranteed for 12 months or higher.
2.	Accelerating Voltage	Up to 30kV , continuously variable.
3.	Probe current	Continuously variable in the range of 1 pA-100nA to enhance both high resolution imaging and fast analytical studies.
4.	Electron Beam Resolution at optimum working distance at 1 kV	≤ 0.7 nm or better
5.	Electron Beam Resolution at optimum working distance at 500 eV	≤ 1.0 nm or better
6.	Monochromator	Electron column should be equipped with a monochromator to reduce energy spread to ≤ 0.2 eV
7.	Beam deceleration/retardation/booster	The quoted system should have the feature to vary and adjust the electron beam energy on the sample.
8.	BSE detector	BSE detector should work with or without deceleration of electron beam. For better contrast selection it should have capability to select BSE signal with different take-off angles.

B. FIB Column:

Sl. No.	Features	Specifications
1.	Accelerating Voltage	Landing energy up to 30 kV , continuously variable or in steps down to 500 V.
2.	Ion Gun	Gallium liquid metal ion source. Guaranteed life should be 1000 hours or greater.
3.	Probe Current	Covering the range from 1 pA to 65nA.
4.	Imaging Resolution	2.5 nm or better @ 30 kV using selective edge method at optimal working distance
5.	Automated FIB Milling and GIS Deposition	Milling process should be automated with 5 axis computer controlled stage.
7.	FIB induced deposition	The minimum ion-beam deposition line-width obtainable should be 50 nm or better.
8.	Gas sources for deposition	Pt and W for deposition by both ion beam and electron beam. Gas Injection System (GIS) control for automation.
9.	Gas nozzle placement repeatability	5 µm or better. Adjustable nozzle position should be possible with respect to the specimen.
10.	Ports attached to the Chamber	The Chamber should be provided with at least 20 chamber ports or more for different Gas Injection needles, enhancing analytical capabilities of the instrument and future upgrade of in-situ manipulators.

11.	Manipulator for TEM and APT sample preparation	<p>In situ micromanipulator for preparation of transmission electron microscopy (TEM) samples under computer control without operator intervention. Micromanipulator should have 4 axis of motorised movements X, Y, Z and R. Motorized insertion and retraction that gives superior positioning control. In situ manipulator with a 4 degrees of freedom.</p> <p>Drift < 50 nm / min Minimum step size 50 nm or better Vibration < 15 nm. Omni directional repeatability < +/- 150 nm Rotation should be motorized. Manipulator movements to be controlled from the same SEM/FIB user interface.</p>
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C. Common to both Electron-beam and Ion-beam columns:

Sl. No.	Common Features	Specifications
1.	Detectors	Secondary electron detector (Everhart-Thornley). Dedicated in lens /in column detector for Back scattered electron imaging. Dedicated in lens / in column detector for Secondary electron imaging. Dedicated Secondary Ion detector for Ion column. IR-CCD detector Navigational camera
2.	Stage	<p>5-axis motorised stage. Stage should be Piezo driven at least on X, Y and R axes. Stage Should allow independent movements in x, y, z directions with rotation (360° continuous) and tilt capabilities, with motorized range as below: X: ≥150 mm or better Y: ≥150 mm or better Z: ≥10 mm R: 360° continuous (including compucentric rotation, tilt) T: -10 to +60° total range Repeatability and accuracy of movement of the stage should be 1 micrometer or less. Stage movement control through mouse Max sample size: 150 mm with full rotation Max sample height: Clearance 55 mm to eucentric point 5-axis compustage double-flip STEM holder with automated insert, retract mechanism for high-quality TEM sample preparation, imaging.</p>
3.	Specimen holders	Holders for standard metallography mounts (0.5", 1" and 1.5" diameter) Multiple specimen holder(s) with capability to mount - 10 or more SEM stubs - TEM grid holder with multiple grids Multi-purpose specimen holder with adjustable height
4.	Chamber	Should be large enough to accommodate the maximum specimen size mentioned above in item no. 2. IR-CCD camera for observing stage and specimens inside the chamber Chamber size should be minimum 350 mm or higher. Should include load lock for easy sample transfer or exchange.
5.	Vacuum System	Should be air-cooled TMP backed by dry scroll pump or diaphragm pump(s) Fully automatic microprocessor controlled high-capacity vacuum system Status display on computer monitor.

6.	Image Processor	<p>Resolution: Scanning pixel density to be up to 6144 x 4096 selectable</p> <p>Ability to capture still images and videos.</p> <p>Should provide a range of integration and averaging modes.</p> <p>Should enable drift compensation during imaging in averaging mode.</p> <p>Should enable saving of images to files of the following types: TIFF (8 or 16-bit, selectable by user) and/or BMP and JPEG.</p> <p>Image area selection – full frame, reduced raster, line X, line Y and spot modes, with independent setting of operational parameters such as line scan times, number of lines/frame etc.</p> <p>Should have 3-D image reconstruction capabilities from the acquired SE and BSE images from different subsurface depths.</p>
7.	Image Display	<p>24" LCD monitor</p> <p>SVGA/XVGA/WUXGA 1920x1200 or better</p> <p>Four-quadrant display, to simultaneously display signals from four separate detectors, live or stored</p>
8.	Image Output / Recording Systems	Digital storage (in <i>tiff</i> , <i>jpeg</i> and/or other common image storage formats) through the control computer
9.	System Control	<p>High end computer i9 or better processor with a Windows 10 or higher operating system, 2 TB or higher SSD hard drive, 64 GB RAM, 24 inch or larger LCD monitor, Microsoft Office and all necessary software for operation, acquisition of data, analysis and report preparation</p> <p>Appropriate microscope control software for alignment, image capture and archival etc. (system should be capable of automatic gun alignment)</p> <p>Should offer both automatic and manual control of features like focus, contrast, astigmatism correction etc.</p> <p>Specimen current and vacuum should be indicated in the user interface.</p> <p>Capability to save user settings and parameters for beam and scanning, patterns, detectors, user interface appearance should be available.</p>
10.	Image Analysis software	<p>Should provide at least the following basic features:</p> <ul style="list-style-type: none"> Point, linear and area measurement Line profile Annotation Image saving and retrieval <p>SEM/FIB settings information can be included with each image as a text data</p>
11.	FIB software	<p>Software should be capable for automated serial sectioning and imaging through a user-defined volume of a specimen should be quoted.</p> <p>Software that allows for unattended TEM sample preparation and cross-sectioning with a Focused Ion Beam should be quoted. The software should be controlled through an intuitive user interface and setting up treatment of multiple samples that can be done quickly and easily.</p>
12.	Navigation camera	It should be color, high resolution (at least 6Mpix) integrated with user interface for convenient navigation over the sample options for annotation and saving of the image.
13.	Plasma cleaning	Sample and chamber cleaning by the integrated plasma source should be available that is suitable to remove carbon and other contaminations from the surface.
14.	Power supply	The system and its accessories should be capable of operating at 220V, 50Hz single phase power supply. The complete system must be properly shielded.
15.	Air Compressor, or, high-pressure N₂ supply	The compressor, which is used for operating the pneumatic valves, should be noise-free and should come as a part of the entire FIB-FESEM system

16.	Chiller	Chiller should be included for the microscope if it is required for operation.
17.	Computer	A server with i9 processor and 10 TB hard disk and 64 GB RAM for running the network based EDS-EBSD data acquisition and analysis software
18.	Future upgrade	The quoted system should be capable of future up gradation to WDS and photoluminescence attachments.
19.	Electron and ion source	Electron and ion sources to be quoted separately for the consumption period of 3 years

EDS System should consist of the following capabilities:

1. The EDS system should be capable of doing collection and analysis at dual beam coincident point.
2. The EDS should be a **motorized insertion** and retraction capable.
3. A silicon drift detector (**SDD**), pulse processor, and system computer.
4. Active area equal or better than **30 mm²**
5. Energy resolution at **Mn K alpha** better than **129 eV**
6. Input count rates **>1,000,000 counts per second**
7. Detection down to **Boron**
8. Calibration Standard for EDS

EDS software capabilities:

1. Should have the capabilities of point analysis, area analysis, elemental mapping, line scanning etc.,
2. Quantification of spectra into weight and atomic percentage of the elements indexed.
3. User interactive qualitative and standard less/ standards based quantification with K, L, M, N line database.
4. Quantification based on eZAF and PeBaZAF.
5. Automatic and manual determination of background correction for element identification and quantification.
6. Grey scale map of total EDS counts

EBSD System should consist of the following minimum capabilities:

1. CMOS detector capable of acquiring diffraction patterns at a rate of at least **3000 patterns per second on standard sample** and auto indexing of the patterns to generate crystallographic mapping information. The EBSD System shall be capable of functioning at the dual-beam working distance of the system.
2. EBSD detector positions away from the line of sight of ion streaming during serial ion sectioning
3. Pixel binning: **1x1, 2x2, 4x4, 8x8**
4. Orientation precision 0.1 degrees or better
5. Insertion and retraction of the camera should be motorized and controlled via the EBSD software
6. The camera movement should have audible safety alarm with auto retract mechanism.
7. The camera interface to SEM should have sliding and tilting interface plate to correctly position the camera at the shortest possible EBSD EDS for optimal resolution.
8. IR filter for protecting the camera during in-situ heating experiments.
9. EBSD Calibration Standard EBSD (Recrystallised Ni alloy)
10. EBSD camera should include forward scatter detector
11. Capability to perform Transmission Kikuchi Diffraction of Atom Probe and FIB prepared TEM lamella.

EBSD Software Capability

1. EBSD software should work on the same computer platform as that of EDS system.
2. Allow data acquisition from large areas using beam and /stage control to maintain focus over each mapped field to reconstruct large area Maps
3. Integrated EDS and EBSD data collection should be possible for analysis of phases with same crystal structures.

4. Binning, background correction, gain et-c. should be adjustable both automatically and manually
5. Pole Figure plotting, Inverse pole figure plotting, inverse pole figure image mapping, orientation distribution function plotting, image quality mapping, grain mapping, various misorientation plotting, Imaging and Beam Control, Stage Control, phase Identification through integration with ICDD data base.
6. One additional analysis software license should be provided
7. Phase identification to find the best match to the EBSD pattern from the unknown phase using the database.
8. It should be possible to selected areas within the electron image may be defined for analysis if a complete map of the sample area is not required.
9. For Pole Figure a display should be available for each crystal type within a data set. The highest usage orientations
10. should be provided for each crystal symmetry along with a user-defined custom orientation.
11. Inverse pole figures should display orientation data relative to the crystal axes. The pole figures should be interactive.
12. Grain boundary maps to display grain boundary angles, axes and coincidence site lattice (CSL) or special case boundaries.
13. The crystal database and editor should use the standard crystallographic information file (CIF) format.
14. Users should import crystal structural data and edit crystal files in the database
15. Pre-tilted (70.5°) sample holder for EBSD (4 Nos.) and TKD sample holder (2 Nos.)
16. A server with i9 processor and 10 TB hard disk and 64 GB RAM for running the network based EDS-EBSD data acquisition and analysis software
17. Perpetual ICDD materials database license for metals, alloys, intermetallic, ceramics and polymers with free updates to the database for 3 years

PROFORMA FOR TECHNICAL COMPLIANCE SHEET
Supply of Dual Beam Focused Ion Beam Facility
Tender No. IITM/SPS/FIB-SEM /042/GTE/2023-24/SPL

BIDDER ELIGIBILITY CRITERIA – I

S. No.	Description	Compliance (Yes / No)	Reference Page No.
1	The bidder shall not be from a country sharing land border with India and if the bidder is from a country sharing land border with India the bidder should have been registered with the competent authority as per orders of DIPP OM No. F. No. 6/18/2019-PPD dated 23rd July 2020, and MoCI Order No. P-45021/112/2020-PP (BE II) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in Annexure – D.		
2	Neither the tender participating firm nor any of its partner has been blacklisted / debarred /involved / convicted in any criminal case / economic offence nor any criminal case / economic offence is pending against firm or any partner of the Firm before any Court of Law / Police. A self-declaration format given in Annexure – E.		
3	The firm must have an aggregate financial turnover of at least Rs.720 Lakhs in the last 5 years i.e. 2018-19, 2019-20,2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant)		
4	The bidder should be an OEM or authorized supplier of OEM. Necessary OEM certificate / OEM authorization letter for this particular tender should be submitted by the bidder as given in Annexure-F.		
5	The bidder should have a service centre in Chennai for service support. Proof of service centre in Chennai should be furnished as documentary evidence (such as valid rental agreement/GST Certificate/ Certificate of incorporation etc.)		
6	<p>The bidder should have 10 years experience in supply of Dual Beam Focused Ion Beam Facility (similar to the tendered item) and should have supplied the item to the reputed Institutions (like IIT,NIT and Central/State University/Central Research Labs)/ R&D Units in India as detailed below:</p> <p>Three(3) similar contracts each costing not less than Rs. 360 Lakhs; (Or) Two(2) similar contracts each costing not less than Rs. 540 Lakhs; (Or) One(1) similar contract not costing less than Rs. 720 Lakhs</p> <p>Copies of the document listed below should be submitted as a proof for the above work experience:</p> <p>a. Work Order/Purchase Order should be submitted and also the list of instruments supplied including contact details (name of the person- in – charge, email, and phone number) should be provided.</p> <p>b. Work Completion Certificate/or User performance Certificate from End User</p>		

TECHNICAL SPECIFICATION:

A. Electron Beam Column:

SI No	Features	Specifications	Compliance (Yes / No)	Ref Page No.
1.	Electron Source	Thermal Schottky Field-emitter. Source life time should be guaranteed for 12 months or higher.		
2.	Accelerating Voltage	Up to 30kV , continuously variable.		
3.	Probe current	Continuously variable in the range of 1 pA-100nA to enhance both high resolution imaging and fast analytical studies.		
4.	Electron Beam Resolution at optimum working distance at 1 kV	≤ 0.7 nm or better		
5.	Electron Beam Resolution at optimum working distance at 500 eV	≤ 1.0 nm or better		
6.	Monochromator	Electron column should be equipped with a monochromator to reduce energy spread to ≤ 0.2 eV		
7.	Beam deceleration/retardation/booster	The quoted system should have the feature to vary and adjust the electron beam energy on the sample.		
8.	BSE detector	BSE detector should work with or without deceleration of electron beam. For better contrast selection it should have capability to select BSE signal with different take-off angles.		

B. FIB Column:

SI No	Features	Specifications	Compliance (Yes / No)	Ref Page No.
1.	Accelerating Voltage	Landing energy up to 30 kV , continuously variable or in steps down to 500 V.		
2.	Ion Gun	Gallium liquid metal ion source. Guaranteed life should be 1000 hours or greater.		
3.	Probe Current	Covering the range from 1 pA to 65nA.		
4.	Imaging Resolution	2.5 nm or better @ 30 kV using selective edge method at optimal working distance		
5.	Automated FIB Milling and GIS Deposition	Milling process should be automated with 5 axis computer controlled stage.		
7.	FIB induced deposition	The minimum ion-beam deposition line-width obtainable should be 50 nm or better.		
8.	Gas sources for deposition	Pt and W for deposition by both ion beam and electron beam. Gas Injection System (GIS) control for automation.		
9.	Gas nozzle placement repeatability	5 μm or better. Adjustable nozzle position should be possible with respect to the specimen.		
10.	Ports attached to the Chamber	The Chamber should be provided with at least 20 chamber ports or more for different Gas Injection needles, enhancing analytical capabilities of the instrument and future upgrade of in-situ manipulators.		

11.	Manipulator for TEM and APT sample preparation	<p>In situ micromanipulator for preparation of transmission electron microscopy (TEM) samples under computer control without operator intervention.</p> <p>Micromanipulator should have 4 axis of motorised movements X, Y, Z and R.</p> <p>Motorized insertion and retraction that gives superior positioning control. In situ manipulator with a 4 degrees of freedom.</p> <p>Drift < 50 nm / min</p> <p>Minimum step size 50 nm or better</p> <p>Vibration < 15 nm.</p> <p>Omni directional repeatability < +/- 150 nm</p> <p>Rotation should be motorized.</p> <p>Manipulator movements to be controlled from the same SEM/FIB user interface.</p>		
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C. Common to both Electron-beam and Ion-beam columns:

SI No	Features	Specifications	Compliance (Yes / No)	Ref. P No
1.	Detectors	<p>Secondary electron detector (Everhart-Thornley).</p> <p>Dedicated in lens /in column detector for Back scattered electron imaging.</p> <p>Dedicated in lens / in column detector for Secondary electron imaging.</p> <p>Dedicated Secondary Ion detector for Ion column.</p> <p>IR-CCD detector</p> <p>Navigational camera</p>		
2.	Stage	<p>5-axis motorised stage.</p> <p>Stage should be Piezo driven at least on X, Y and R axes.</p> <p>Stage Should allow independent movements in x, y, z directions with rotation (360° continuous) and tilt capabilities, with motorized range as below:</p> <p>X: ≥150 mm or better</p> <p>Y: ≥150 mm or better</p> <p>Z: ≥10 mm</p> <p>R: 360° continuous (including compucentric rotation, tilt)</p> <p>T: -10 to +60° total range</p> <p>Repeatability and accuracy of movement of the stage should be 1 micrometer or less.</p> <p>Stage movement control through mouse</p> <p>Max sample size: 150 mm with full rotation</p> <p>Max sample height: Clearance 55 mm to eucentric point</p> <p>5-axis compustage double-flip STEM holder with automated insert, retract mechanism for high-quality TEM sample preparation, imaging.</p>		
3.	Specimen holders	<p>Holders for standard metallography mounts (0.5", 1" and 1.5" diameter)</p> <p>Multiple specimen holder(s) with capability to mount</p> <p>- 10 or more SEM stubs</p> <p>- TEM grid holder with multiple grids</p> <p>Multi-purpose specimen holder with adjustable height</p>		

4.	Chamber	Should be large enough to accommodate the maximum specimen size mentioned above in item no. 2. IR-CCD camera for observing stage and specimens inside the chamber Chamber size should be minimum 350 mm or higher. Should include load lock for easy sample transfer or exchange.		
5.	Vacuum System	Should be air-cooled TMP backed by dry scroll pump or diaphragm pump(s) Fully automatic microprocessor controlled high-capacity vacuum system Status display on computer monitor.		
6.	Image Processor	Resolution: Scanning pixel density to be up to 6144 x 4096 selectable Ability to capture still images and videos. Should provide a range of integration and averaging modes. Should enable drift compensation during imaging in averaging mode. Should enable saving of images to files of the following types: TIFF (8 or 16-bit, selectable by user) and/or BMP and JPEG. Image area selection – full frame, reduced raster, line X, line Y and spot modes, with independent setting of operational parameters such as line scan times, number of lines/frame etc. Should have 3-D image reconstruction capabilities from the acquired SE and BSE images from different subsurface depths.		
7.	Image Display	24" LCD monitor SVGA/XVGA/WUXGA 1920x1200 or better Four-quadrant display, to simultaneously display signals from four separate detectors, live or stored		
8.	Image Output / Recording Systems	Digital storage (in <i>tiff</i> , <i>jpeg</i> and/or other common image storage formats) through the control computer		
9.	System Control	High end computer i9 or better processor with a Windows 10 or higher operating system, 2 TB or higher SSD hard drive, 64 GB RAM, 24 inch or larger LCD monitor, Microsoft Office and all necessary software for operation, acquisition of data, analysis and report preparation Appropriate microscope control software for alignment, image capture and archival etc. (system should be capable of automatic gun alignment) Should offer both automatic and manual control of features like focus, contrast, astigmatism correction etc. Specimen current and vacuum should be indicated in the user interface. Capability to save user settings and parameters for beam and scanning, patterns, detectors, user interface appearance should be available.		
10.	Image Analysis software	Should provide at least the following basic features: Point, linear and area measurement Line profile Annotation Image saving and retrieval SEM/FIB settings information can be included with each image as a text data		

11.	FIB software	Software should be capable for automated serial sectioning and imaging through a user-defined volume of a specimen should be quoted. Software that allows for unattended TEM sample preparation and cross-sectioning with a Focused Ion Beam should be quoted. The software should be controlled through an intuitive user interface and setting up treatment of multiple samples that can be done quickly and easily.		
12.	Navigation camera	It should be color, high resolution (at least 6Mpix) integrated with user interface for convenient navigation over the sample options for annotation and saving of the image.		
13.	Plasma cleaning	Sample and chamber cleaning by the integrated plasma source should be available that is suitable to remove carbon and other contaminations from the surface.		
14.	Power supply	The system and its accessories should be capable of operating at 220V, 50Hz single phase power supply. The complete system must be properly shielded.		
15.	Air Compressor, or, high-pressure N₂ supply	The compressor, which is used for operating the pneumatic valves, should be noise-free and should come as a part of the entire FIB-FESEM system		
16.	Chiller	Chiller should be included for the microscope if it is required for operation.		
17.	Computer	A server with i9 processor and 10 TB hard disk and 64 GB RAM for running the network based EDS-EBSD data acquisition and analysis software		
18.	Future upgrade	The quoted system should be capable of future up gradation to WDS and photoluminescence attachments.		
19.	Electron and ion source	Electron and ion sources to be quoted separately for the consumption period of 3 years		

EDS System should consist of the following capabilities:

SI No	Common Features	Compliance Yes/No	Ref. Page No
1.	The EDS system should be capable of doing collection and analysis at dual beam coincident point.		
2.	The EDS should be a motorized insertion and retraction capable.		
3.	A silicon drift detector (SDD), pulse processor, and system computer.		
4.	Active area equal or better than 30 mm²		
5.	Energy resolution at Mn K alpha better than 129 eV		
6.	Input count rates >1,000,000 counts per second		
7.	Detection down to Boron		
8.	Calibration Standard for EDS		

EDS software capabilities:

SI No	Common Features	Compliance Yes/No	Ref. Page No
1.	Should have the capabilities of point analysis, area analysis, elemental mapping, line scanning etc.,		
2.	Quantification of spectra into weight and atomic percentage of the elements indexed.		
3.	User interactive qualitative and standard less/ standards based quantification with K, L, M, N line database.		
4.	Quantification based on eZAF and PeBaZAF.		
5.	Automatic and manual determination of background correction for element identification and quantification.		
6.	Grey scale map of total EDS counts		

EBSB System should consist of the following minimum capabilities:

SI No	Common Features	Compliance Yes/No	Ref. Page No
1.	CMOS detector capable of acquiring diffraction patterns at a rate of at least 3000 patterns per second on standard sample and auto indexing of the patterns to generate crystallographic mapping information. The EBSD System shall be capable of functioning at the dual-beam working distance of the system.		
2.	EBSD detector positions away from the line of sight of ion streaming during serial ion sectioning		
3.	Pixel binning: 1x1, 2x2, 4x4, 8x8		
4.	Orientation precision 0.1 degrees or better		
5.	Insertion and retraction of the camera should be motorized and controlled via the EBSD software		
6.	The camera movement should have audible safety alarm with auto retract mechanism.		
7.	The camera interface to SEM should have sliding and tilting interface plate to correctly position the camera at the shortest possible EBSD EDS for optimal resolution.		
8.	IR filter for protecting the camera during in-situ heating experiments		
9.	EBSD Calibration Standard EBSD (Recrystallised Ni alloy)		
10.	EBSD camera should include forward scatter detector		
11.	Capability to perform Transmission Kikuchi Diffraction of Atom Probe and FIB prepared TEM lamella.		

EBSB Software Capability

SI No	Common Features	Compliance Yes/No	Ref. Page No
1.	EBSD software should work on the same computer platform as that of EDS system.		
2.	Allow data acquisition from large areas using beam and /stage control to maintain focus over each mapped field to reconstruct large area Maps		
3.	Integrated EDS and EBSD data collection should be possible for analysis of phases with same crystal structures.		
4.	Binning, background correction, gain et-c. should be adjustable both automatically and manually		
5.	Pole Figure plotting, Inverse pole figure plotting, inverse pole figure image mapping, orientation distribution function plotting, image quality mapping, grain mapping, various misorientation plotting, Imaging and Beam Control, Stage Control, phase Identification through integration with ICDD data base.		
6.	One additional analysis software license should be provided		

7.	Phase identification to find the best match to the EBSD pattern from the unknown phase using the database.		
8.	It should be possible to selected areas within the electron image may be defined for analysis if a complete map of the sample area is not required.		
9.	For Pole Figure a display should be available for each crystal type within a data set. The highest usage orientations		
10.	should be provided for each crystal symmetry along with a user-defined custom orientation.		
11.	Inverse pole figures should display orientation data relative to the crystal axes. The pole figures should be interactive		
12.	Grain boundary maps to display grain boundary angles, axes and coincidence site lattice (CSL) or special case boundaries.		
13.	The crystal database and editor should use the standard crystallographic information file (CIF) format.		
14.	Users should import crystal structural data and edit crystal files in the database		
15.	Pre-tilted (70.5°) sample holder for EBSD (4 Nos.) and TKD sample holder (2 Nos.)		
16.	A server with i9 processor and 10 TB hard disk and 64 GB RAM for running the network based EDS-EBSD data acquisition and analysis software		
17.	Perpetual ICDD materials database license for metals, alloys, intermetallic, ceramics and polymers with free updates to the database for 3 years		

*** Reference page number is mandatory and should be mentioned in the technical compliance**

**SIGNATURE OF BIDDER ALONG WITH
SEAL OF THE COMPANY WITH DATE**

PROFORMA FOR FINANCIAL BID (BoQ)**Supply of Dual Beam Focused Ion Beam Facility
Tender No. IITM/SPS/FIB-SEM /042/GTE/2023-24/SPL**

Sl.No.	Item Description	Unit	Qty	Quoted currency in INR/USD/EUR	Unit Rate in Figures to be entered by the Bidder in INR (or) Ex-works rate for USD/EUR	GST/CIP Chennai Charges	Total value incl. of GST
1	Supply of Dual Beam Focused Ion Beam Facility with essential accessories as per technical specification in Annexure-A	No.	1			ENTER AND SUBMIT THE FINANCIAL BID IN THE CPP (e-PROCUREMENT POTENTIAL)	

Note:

The price quoted must be considering all terms and conditions, bidder eligibility criteria and as per Technical bid mentioned in Annexure – A

The prices quoted by the bidder should be inclusive of Training, Installation, Transportation GST and other Charges.

**SIGNATURE OF BIDDER ALONG WITH
SEAL OF THE COMPANY WITH DATE**

(To be given on the letter head of the bidder)

Supply of Dual Beam Focused Ion Beam Facility

Dated: _____

CERTIFICATE

(Bidders from India)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I am not from such a country.

OR

(Bidders from Country which shares a land border with India)

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and hereby certify that I am from _____ (Name of Country) and have registered with the Competent Authority. I also certify that I fulfil all the requirements in this regard and am eligible to be considered. *(Copy/ evidence of valid registration by the Competent Authority is to be attached)*

Place:
Date:

**Signature of the Bidder
Name & Address of the
Bidder with Office Stamp**

(To be given on the letter head of the bidder)

Self-Declaration that the Service Provider has not been Black listed

I S/o

R/o police station District Director

/ Partner/ sole proprietor (Strike out whichever is not applicable) of

..... (Firm or Company) do hereby declare and solemnly affirm:

- I. That the Firm has not been Blacklisted or declared insolvent by any of the Union or State Government / Organization.
- II. That none of the individual / firm / Company Blacklisted or any partners or shareholder thereof has any connection directly or indirectly with or has any subsistence interest in the deponent business / firm company.
- III. That neither the Firm nor any of its partner has been involved / convicted in any criminal case / economic offence nor any criminal case / economic offence is pending against firm or any partner of the Firm before any Court of Law / Police.

Place:
Date:

Signature of the Tenderer
Name & Address of the
Tenderer with Office Stamp

OEM CERTIFICATION FORM

(In Original Letter Head of OEM)

Tender No: Dated:

We are Original Equipment Manufacturers (OEM) of..... (Name of the company)

Ms..... (Name of the vendor) is one of our Distributors/Dealers/Resellers/Partners (tick one) for the and is participating in the above mentioned tender by offering our product model..... (Name of the product with model number).

..... Is authorized to bid, sell and provide service support warranty for our product as mentioned above.

Name and Signature of the authorized
Signatory of OEM along with
Seal of the company with Date

**FORMAT FOR AFFIDAVIT OF SELF-CERTIFICATION UNDER PUBLIC PROCUREMENT POLICY
(PREFERENCE TO MAKE IN INDIA) 2017**

Tender Reference Number: Tender No. IITM/SPS/FIB-SEM/042/GTE/2023-24/SPL

Name of the item / Service: Supply of Dual Beam Focused Ion Beam Facility

Date: _____

I/We _____ S/o, D/o, W/o,

Resident of _____

hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Policy vide GoI Order no. P-45021/2/2017-PP (B.E.-II) dated 15.06.2017 (subsequently revised vide orders dated 28.05.2018, 29.05.2019 and 04.06.2020) MOCI order No. 45021/2/2017-PP (BE II) Dt.16th September 2020 & P- 45021/102/2019-BE-II-Part(1) (E-50310) Dt.4th March 2021 and any subsequent modifications/Amendments, if any and

That the local content for all inputs which constitute the said item/service/work has been verified by me and I am responsible for the correctness of the claims made therein.

Tick (✓) and Fill the Appropriate Category	
<input type="checkbox"/>	I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to or more than 50% and come under “Class-I Local Supplier” category.
<input type="checkbox"/>	I/We _____ [name of the supplier] hereby confirm in respect of quoted items that Local Content is equal to or more than 20% but less than 50% and come under “Class-II Local Supplier” category.
<input type="checkbox"/>	I/We _____ [name of the manufacturer] hereby confirm in respect of quoted items that Local Content is less than 20% come under ‘Non – Local Supplier’ category

The details of the location (s) at which the local value addition is made and the proportionate value of local content in percentage

Percentage of Local content : _____ %**

Location at which value addition done : _____

For and on behalf of (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

[Note: In case of procurement for a value in excess of Rs. 10 Crores, the bidders shall provide this certificate from statutory auditor or cost auditor of the company (in the case of companies) or from a practicing cost accountant or practicing chartered accountant (in respect of suppliers other than companies) giving the percentage of local content.]

This letter should be on the letterhead of the quoting firm and should be signed by a competent authority.

*** Services such as transportation, insurance, installation, commissioning, and training and after sales service support like AMC/CMC cannot be claimed as local value addition*

Supply of Dual Beam Focused Ion Beam Facility
Tender No. IITM/SPS/FIB-SEM/042/GTE/2023-24/SPL

APPENDIX-A:

(To be given on the letter head of the bidder)

I/We undertake the availability of spare parts for at least 10 years from the date of successful installation for the above tender.

Place:
Date:

Signature of the bidder
Name & Address of the
Bidder with Office Stamp