



भारतीय प्रौद्योगिकी संस्थान मद्रास चेन्नै 600 036
INDIAN INSTITUTE OF TECHNOLOGY MADRAS Chennai 600 036
भंडार एवं क्रय अनुभाग
STORES & PURCHASE SECTION
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P.K. SHEBA SABARI
Assistant Registrar (Stores & Purchase)

Date: 11.03.2024

Tender No. IITM/SPS/MPL/050/2023-24/SPL

Due Date 18.03.2024
Before 03.00 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:

SUPPLY OF MATERIALS PROCESSING LAB (MPL) EQUIPMENT AT IIT MADRAS

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	: 18.03.2024 before 03.00 p.m.
	Date & Time of opening of Tender	: 19.03.2024 @ 3.30 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/appThe 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 PortalMore information useful for submitting online bids on the CPP Portal may be obtained at: https://etenders.gov.in/eprocure/appAll 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	<p>:</p> <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	<p>:</p> <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)	<ul style="list-style-type: none"> i. EMD of INR 2,40,000/- (Rupees Two Lakh Forty Thousand only) should be transferred through NEFT/RTGS to the following bank account on or before due date 18.03.2024 before 03.00 p.m. Name : Registrar IIT Madras Bank : State Bank of India Account No. : 10620824305 Branch : IIT MADRAS IFSC CODE : SBIN0001055

		<ul style="list-style-type: none"> ii. As per O.M. No.F.1/2/2022-PPD Dated 01.04.2022, the EMD will be returned to the 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. iii. The EMD amount should not be sent through DD. iv. Non-submission of EMD details on or before the due date and time will result in rejection of the e-bid. 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. 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. vii. In case of successful bidder, the EMD will be adjusted towards the Performance Guarantee on request, subject to validity. 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.
I	तकनीकी बोली पर मार्किंग /Marking on Technical Bid	<ul style="list-style-type: none"> i. The Bidder Eligibility Criteria, technical specification of the item for this tender is given in Annexure A. The Bidders shall go through the Bidder Eligibility Criteria, Technical Specification and submit the technical bid in the proforma given in Annexure B in the tender document along with the supporting documents. ii. The Technical bid should be submitted in pdf format only through online (e-tender). No manual submission of bid will be entertained. 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. iv. The technical bid should consist of <ul style="list-style-type: none"> a) Document proof for EMD payment b) Technical Compliance sheet as per proforma given in Annexure –B c) Document proof for Bidder eligibility criteria , technical details along with catalogue / brochure and other technical, commercial terms and conditions.
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 by the bidders should be inclusive of Training, Installation, Transportation, GST and other charges. • All conditional tenders will be summarily rejected.
5.	<p>भुगतान टीमें Payment terms :</p> <ul style="list-style-type: none"> • 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 should be maximum 2 months from the date of issue of purchase order.</p>
7.	<p>Warranty and AMC:</p> <ol style="list-style-type: none"> a) 2 years Standard Warranty from the date of installation for all the equipment. b) A continuous operational support to IIT Madras should be provided without any additional cost during the warranty period. c) OPTIONAL for extended warranty - 3 years. d) Annual Maintenance contract (AMC) should be quoted as option for 2 years upon the completion of the extended warranty period.

	<p>e) Comprehensive maintenance contract should include cost of services as well as spares.</p> <p>f) Vendor should also give schedule of preventive maintenance in their offer. During the period of contract vendor should respond to breakdown within 72 hours of reporting.</p> <p>g) The vendor should also mention the payment schedule for AMC along with their offer.</p>
8.	<p>Installation & Training:</p> <p>a) All the essential requirements ensuring a ready-to-use set up at IIT Madras should be supplied.</p> <p>b) Overall dimensions of the machine to be shown schematically, specifying the area required to install the machine in all three dimensions with the accessories.</p> <p>c) Clear documentation on the site requirements and site needs should be provided.</p> <p>d) OEM / Bidder should carry out the installation and commission of the machine at the Customer site at free of cost.</p> <p>e) After installation and commissioning of the equipment, there will be a Site Acceptance Test (SAT) on mutually agreed terms.</p> <p>f) Safety training at the time of installation should be provided on-site at the time of installation and acceptance test. There should not be any restriction on number of persons to be trained.</p> <p>g) Training should be provided on-site at the time of installation and acceptance test. There should not be any restriction on number of persons to be trained.</p> <p>h) However, training shall be restricted to one batch of few persons.</p> <p>i) All the training instructions have to be in English only. Duration of training should be adequate for the identified operators to understand and operate the machine independently.</p>
9.	<p>Spare parts and accessories will be available for smooth operation over at least 15 years from the date of installation. However, the consumables and parts required at the time of installation and standardisation should be given free of cost. (Self declaration- APPENDIX-A)</p>
10.	<p>The bidder should have local presence of qualified engineer(s) for prompt and efficient after sales services for at least the next 10 years. They should also have established local application laboratory to assist us for our regular assistance for our samples/methods/data interpretations- (Self declaration APPENDIX- B).</p>
11.	<p>Additional Mandatory Conditions:</p> <p>a) The operational status of all the equipment in India should be provided (Self Declaration).</p> <p>b) "Emergency Stop" button(s) should be provided at convenient and easily accessible location.</p> <p>c) The equipment brochures, operation and safety manuals, charts should be provided.</p> <p>d) Flow line diagrams and electrical circuit diagrams should be provided.</p> <p>e) A preinstallation instructions should be provided with the equipment, indicating electrical, space, gas connections and safety protocols should be provided.</p> <p>f) Overall dimensions of the machine to be shown schematically, specifying the area required to install the machine in all three dimensions with the accessories.</p> <p>g) After installation and commissioning of the equipment, there will be a Site Acceptance Test (SAT) on mutually agreed terms.</p>
12.	<p>निबंधन व शर्तें Terms and Conditions:</p> <p>Failure to comply with any of the instructions stated in this document or offering unsatisfactory explanations for non-compliance will likely to lead to rejection of offers.</p>
13.	<p>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.</p>
14.	<p>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.</p>
15.	<p>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.</p>
16.	<p>बोलीदाता को इस निविदा के साथ जमा करना होगा Bidder shall submit along with this Tender:</p> <p>Name and full address of the Banker and their swift code and PAN No. and GSTIN number.</p>
17.	<p>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.</p>

18.	<p>Right of IIT Madras</p> <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.
19.	<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.
20.	<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>
21.	<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>
22.	<p>बोलीदाता पात्रता मानदंड Bidder Eligibility Criteria:</p> <ol style="list-style-type: none"> a. 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) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in Annexure – D. b. 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P45021/2/2017-PP (BE) 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 – E. c. 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 – F. d. 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-G. e. The bidder must have an aggregate financial turnover of at least Rs. 64 Lakhs in the last 3 years i.e. 2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant) 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.)

	<p>g. The bidder should have supplied atleast one identical item called for in the tenders to 5 different reputed Institutions like IIT/NIT/ Central or State Government / Central Research Labs / R&D units/ IISc, IISERs in India in the last five years.</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 similar 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> <p>c) A global reference list as well as user list in India should be enclosed.</p>
23.	<p>बोलियों की संख्या और उनका प्रस्तुतीकरण Number of Bids and their Submission: 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.
25.	<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 criterion 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. The technical specification will be evaluated for each line item separately. <p>Stage II: Financial Bid Evaluation:</p> <ol style="list-style-type: none"> The Lowest rate quoted for each line item by the technically qualified bidder will alone be taken for L1 rate evaluation for that particular item. The order for that item will be awarded to the successful bidder (L1). Order will be awarded for L1 of each line item and not to the overall L1 bidder. Optional Extended Warranty and Optional AMC will not be considered for price bid evaluation to arrive the L1 rate.
26.	<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>
27.	<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>

28.	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.
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**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 MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS Tender No. IITM/SPS/MPL/050/2023-24/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 MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS
Source of Fund (Institute/Project)	IIT Madras
Is Multi Currency Allowed	No
Date of Issue/Publishing	11.03.2024
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Address for Communication	<p><u>For Technical Queries:</u> Dr. Murugaiyan Amirthalingam Associate Professor, Department of Metallurgical and Materials Science Engineering, IIT Madras, Chennai - 600 036. Phone No: 044- 2257- 4784 Email: murugaiyan@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 MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS
Tender No. IITM/SPS/MPL/050/2023-24/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) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in **Annexure – D**.
- II. 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P45021/2/2017-PP (BE) 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 – E**.
- III. 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 – F**.
- 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-G**.
- V. The firm must have an aggregate financial turnover of at least Rs. 64 Lakhs in the last 3 years i.e. 2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant)
- 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 supplied atleast any one identical item called for in the tenders to 5 different reputed Institutions like IIT/NIT/ Central or State Government / Central Research Labs / R&D units/ IISc, IISERs in India in the last five years.

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 similar 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.
- c) A global reference list as well as user list in India should be enclosed.

TECHNICAL SPECIFICATION:

I. PARTICLE SIZE ANALYSER WITH RANGE OF 0.3 NANOMETER TO 10 MICROMETER - 1 NO.

II. PARTICLE SIZE ANALYSER WITH RANGE OF 0.02 MICROMETER TO 2000 MICROMETER OR BETTER - 1 NO.

A.	<p>(i) The equipment should be capable of measuring particle size, zeta potential and molecular mass. The requirements for each of these parameters are given below.</p> <p>(ii) Particle size :</p> <p>(a) Principle: Dynamic Light Scattering Principle</p> <p>(b) Size range: 0.3 nm to 10 µm or better.</p> <p>(c) Repeatability: ±2 % (Size)</p> <p>(d) Maximum concentration: at least 40 % w/v or better for Particle size</p> <p>(e) Measurement angle: At least 2 angles</p> <p>(iii) Zeta Potential :</p> <p>(a) Principle: Electrophoretic Light Scattering using Phase Angle Light Scattering</p> <p>(b) Size range: 5 nm – 100 µm or better,</p> <p>(c) pH range 2 – 12 or better</p> <p>(d) Zeta Potential Range: ± 500 mV or higher</p> <p>(e) Maximum sample conductivity: 20 mS/cm or higher</p> <p>(f) Maximum sample concentration: at least 40 % w/v or better for Zeta Potential</p> <p>(g) Measurement angle: Forward Angle 17° or lower,</p> <p>(h) Repeatability: ± 3% (Zeta)</p> <p>(iv) Molecular-mass: Static Light Scattering</p> <p>(a) Range: 1000 Da – 20 MDa or better,</p> <p>(b) Measurement angle: At least at one angle.</p>
B.	<p>Laser source type: Solid state laser or Gas laser with wavelength in range 532 – 660 nm with Laser Power at least 4 mW or Higher.</p>
C.	<p>Detector: High resolution Avalanche Photo Diode or Photo Multiplier Tube</p>
D.	<p>Measurement angles:</p> <p>For DLS and ELS based measurement, the instrument shall have a facility of measurement at 3 angles. The instrument shall be capable to automatically select the most appropriate angle depending on the sample characteristics. The system should have provision to vary the focus position preferably within Cuvette</p>
E.	<p>(a) Temperature range for DLS and ELS: The instrument shall have a temperature control in the range of 0°C to 90°C or better for Particle size & Zeta measurements also.</p> <p>(b) Humidity range: the instrument shall be capable of operating in a humidity of up to 85 % non-condensing.</p>
F.	<p>Power supply: Should be capable of working well in Indian power supply conditions like 220-240 V, 50 Hz AC, single-phase power supply.</p>
G.	<p>The instrument should be provided with</p> <p>(a) Software:</p> <ol style="list-style-type: none">1. Software should be capable of running the equipment, data acquisition, data analysis, data transfer, graphical presentation etc.2. Should have facility to measure/display Zeta potential, conductivity, temperature, stability etc.3. Should allow time-dependent study of size and Zeta potential for a single sample without changing the cuvette.4. Should allow exporting of data and figures.5. Should overlay multiple measurements.6. Should mention the quality of the data obtained. <p>(b) For particle size analysis:</p> <ol style="list-style-type: none">1. 100 Nos of disposable type2. 1 Nos of Glass/Quartz Cuvette3. 1 No 220 nm NIST traceable standard. <p>(c) Zeta Potential measurement:</p> <ol style="list-style-type: none">1. At least 10 Nos of reusable Cells /Cuvettes with Carbon/Gold electrodes2. Standard - 1 No Zeta potential reference material (If this is not a default part of the equipment supply, you may please quote it as optional item)

H.	<u>Computer:</u> Computer with specification of i5 with 4gb ram, 500 Gb hdd, Windows 8 or higher, 18.5" Display or better.
I.	<u>Additional criteria</u> (a) Bidder may be asked to perform live or remote demonstration of the equipment with one of our samples at their nearest available facility. (b) Quote should be supported with authentic technical data sheet, brochure, and literature. Compliance sheet should be submitted along with bid with correct demarcation of specifications in spec sheet and part numbers of the quoted items.

A. MEASUREMENT PRINCIPLE:

1. System should be based on the principle of static light scattering (laser diffraction) with laser as a light source.
2. System should comply with ISO 13320-1 for Particle size measurement by laser diffraction (LD) technology.

B. PARTICLE SIZE RANGE:

1. Particle in the size range **from 0.02 μm to 2,000 μm or better.**
2. Offered system must have precision / repeatability better than 1% using certified reference standard samples.

C. OPTICAL MODULE:

1. Laser diffraction optics should use Fourier optics or Reverse Fourier Optics configuration, as dictated in ISO 133201, Fourier optics configuration will be preferred because of its better accuracy.
2. Optics should have two or more lasers, nominal laser power of 3mW or more
3. All lasers must be solid state diode lasers, for better stability and coherence, LED light sources not recommended.
4. Should have 150 or more detector elements to collect scattered light from a wide angle of 0.02° to 165°, for better sensitivity and better resolving power.
5. The optical design should be without any mirrors in the beam line for better sensitivity.
6. The measurement algorithms for distribution estimation can be based on Mie theory / Fraunhofer theory for spherical particles and modified version of Mie theory that takes care non spherical particles.
7. All optical components should be rigidly mounted and there should not be any moving parts or
8. exchangeable optics.
9. Alignment of optical components and detectors must be fully automatic and software controlled.

D. WET SAMPLE DELIVERY AND CIRCULATION SYSTEM:

1. The wet sample liquid dispersion system should be fully automated with the sampling sequences like auto filling, auto dilute, multiple rinse, drain, auto run etc. should be selectable through the software (SOP).
2. The pump for liquid circulation must be centrifugal type pump only, peristaltic pumps are not recommended.
3. The circulating pump must be very powerful to circulate even dense materials like refractory minerals and heavy metal powders without sedimentation.
4. A separate auto fill pump for automatic liquid uptake from any unpressurized water or solvent reservoir must be included.
5. The circulations system must be able to handle wide range of aqueous and organic solvents.
6. Typical specifications for the liquid circulations system must be as follows
 - a) Maximum permitted liquid viscosity: 5 cp or more
 - b) Circulation volume: 200mls nominal
 - c) Flow Rate Variable from: 0 to 65 mls / sec or more
7. The sample Delivery and Control system should have a variable power an in-line ultrasonic probe, with variable power and time, sonic frequency about 30 kHz or better, sonic power and time should be set and control through software (SOP).
8. During circulation, Sample must be properly mixed by constant sample splitting and re-mixing, and create built-in turbulence to ensure that all particles are moving constantly within the flow, without a vortex formation and thereby negating the need for an external stirring.
9. It should be possible to clean the wet sample cell easily without dismantling the cell.

E. DRY SAMPLING AND DISPERSION SYSTEM:

1. Compressed air and flow conditions settings should be automated and flexible enough to disperse even highly agglomerated materials and also fine-tuned for measurement of very fragile materials.
2. Sample feeding by way of a vibratory feeder or preferably with a mechanism to suck samples directly using vacuum as it will avoid de-agglomeration, sample splitting, electrostatic charging or sticking associated with vibratory feeder.
3. Maximum pressure 50 psi (345 kPa) with a minimum flow rate 3 CFM (0.0014 m³/h) at 50 psi (345 kPa)
4. Should be possible to work with even small volume samples down to 0.1cc. for applications where sample is expensive to produce or produced in small volumes.
5. It is preferred that dry dispersion cell should not have glass or quartz windows to avoid need of regular cleaning, continuous cleaning can be done with circular vacuum applied around the particle stream.
6. Equipment should be supplied with suitable compressed air source and vacuum source as per the requirement of the offered system.
7. Changeover from Dry to Wet modules and the reverse changeover should be easy and quick.

F. COMPUTER SYSTEM:

1. PC with I5 processor or higher, 2 GB RAM, Windows 10 OS or better
2. 24" TFT Monitor with all other Essential Accessories for the above Instrument.

G. CONTROL AND MEASUREMENT SOFTWARE:

1. The System software must be easy to use and fully integrate the instrument control and reporting for both laser diffraction and dynamic image analysis in one graphical user interface.
2. Software should enable users to measure, recall, validate, export and print their analysis effortlessly, through use of SOPs.
3. Users should be able to set up libraries with their analysis settings, material, fluids, dispersion settings, pump speed and imaging parameters.
4. Compliance with FDA 21 CFR Part 11 compliant with security features that include password protection, electronic signatures, and assignable permissions.
5. Validation: Complete validation kit with IQ/OQ documentation must be made available.
6. Data Tolerance: Set Pass / Fail alerts when your material deviates from upper and lower size limits, ideal for quality control applications.
7. Trending: Ability to trend individual size parameters over a specific time period or material type.
8. Tailored Reports: Use customizable reports to present your data the way you want to see it.
9. Security / Data Protection: Easy to set up and administer password protected security settings including electronic signatures.
10. Software should provide the following Data Handling features for laser diffraction analysis:
 - a) Volume, number, and area distributions.
 - b) Percentile, size, and other summary data
 - c) % Passing, % Retained, and % Channel plots
 - d) Selectable percentile and size points
 - e) Size for any 10 percentile values from 0.01 to 100% should be made available
 - f) Percentile value for any 10 size values with resolution of 0.001 microns
 - g) Standard Operation Procedure (SOP) generation
 - h) User defined sample loading
 - i) Reference library for sample and dispersion medium refractive index
 - j) Auto-sequence, Data tolerance facility
 - k) Statistical data presentation, data trending
 - l) Customizable reporting through software
 - m) Ability to correlate data with sieve data (Sediments feature)
 - n) Data export facility to Excel / ASCII / HTML / Adobe
 - o) Ability to compare particle size distributions in 3D view
 - p) Ability to calculate surface area (Approximation)
 - q) User defined calculations and channel edges.

H. UTILITY AND OTHER REQUIREMENTS:

1. Power: Single-phase 50 Hz, 230 VAC,
2. Operating environment: 15 °C to 35 °C, less than 85% relative humidity, non-condensing
3. If any special tools are required for installation & maintenance of equipment the same should be supplied with main system at no extra cost.
4. Spares and consumables including standard samples required for TWO years of operation must be quotes separately.

III. MULTIPOINT BET SURFACE AREA ANALYSER SYSTEM - 1 No.

- A.** The equipment should be capable of measuring Surface Area, Pore Size, Pore distribution & Pore volume. The measurement principle required is Volumetric method using N₂, Ar, CO₂, and or other non-corrosive gases. The System should have at least 5 nos. Gas ports or more.
- B. Measurement:**
Surface area and pore size, B.E.T., STSA, adsorption isotherm, desorption isotherm. Fully automated multi-point B.E.T. analysis in as little as twenty minutes or better.
- C.**
1. **Relative Pressure range:** 10⁻⁴ to 0.999.
 2. **Pressure Resolution:** Absolute Pressure: 1.2 x 10⁻⁴ Torr & Relative Pressure: 1.5 x 10⁻⁷ p/p₀
 3. **Pressure Measurement Accuracy:** At least 0.1% (of full scale) or better
- D. Sample Preparation:** Should be possible to prepare four or more samples by vacuum and flow method simultaneously with sample analysis for maximum throughput.
- E. Sample Analysis stations:**
2 or More stations for simultaneous operation with dedicated glass Po cell and transducer, Integrated Degassing station & Analysis station working simultaneously.
- F. Power Supply:** 220-240 Hz, 50 Hz, Single phase power supply.
- G. Range of measurement:**
- a) **Specific Surface Area:** At least 0.01 m²/g to no known upper limit.
 - b) **Absolute surface area:** At least 0.5 m²/g to no known upper limit
 - c) **Pore size:** 0.35 to 500 nm, depending upon gas.
 - d) **Pore volume (liquid):** At least 2.2 x 10⁻⁶ ml / g
- H. Degassing requirements:**
4 or more Integrated degassing stations providing 2 heating zones which can run independent temperature profiles. Temperature from ambient to 425 °C, with 1°C intervals with programmable heating protocols multi-step ramp rates / hold times. The Heating mantles should have dual, independent thermocouples for over-temperature safety and should be supported by retractable tethers to eliminate hot metal clips for ease of use.
- I. Vacuum Requirements:** The system should use one Vacuum pump for analysis and de gassing, Ultimate Vacuum of 2.3 x 10⁻³ Torr.
- J. Dewar life capacity:**
Dewar should be of at least 2L or more and should run at least for 40 hours in one refill.

K. Other requirements:

- a) **Software:** To have speed of analysis the instrument data analysis software should include the DoseWizard/ VectorDose/ initial fill/ dVmax features.
- b) **Reference Material:** Surface area reference materials should be supplied along with instrument.
- c) **Cryogen Level Control:** Should have Automatic coolant level control mechanism for precise void volume control and minimize the cold zone volume to yield high accuracy data or appropriate other mechanism to get a better accuracy data.
- d) **Instrument control:** The whole system should be able to run through external PC and suitable data reduction software, to be supplied along with the instrument. Capability to run and view the data on the fly on the instrument touch screen is added advantage. The software should be able to record the entire degassing protocol (including each temperature ramp and soak step) and then link that to the analysis data file when the sample is analyzed, for a complete profile of the analysis parameters from pretreatment to analysis to data reduction.
- e) **RoHS:** The system should be RoHS 3 / CE / BIS compliant.
- f) **Pre-Programmed Analysis Profile:** The system should have the various (at least 20) ASTM/ USP/ DIN/ ISO methods preprogrammed into the instrument as readymade tool for various sample analysis.
- g) Successful bidder should perform live or remote demonstration of the equipment with one of our samples at their nearest available facility on IIT Madras Samples.

L. Mandatory items:

- (a) High purity 99.999% with 2 stage regulator of Helium, Nitrogen, Variable cells for sample measurements.
- (b) Computer with specification of i5 with 4gb ram, 500 Gb hdd, Windows 8 or higher, 24" LED Display or better.

IV. METAL POWDER TAP DENSITY MEASUREMENT SYSTEM - 1 NO.

Mandatory conditions:

- 1. Equipment should be capable of measuring the tap density of the system as per ASTM B527-23.
- 2. Equipment should be capable of determining of tap density (packed density) of metal powders and compounds, that is, the density of a powder that has been tapped, to settle contents, in a container under ambient conditions.
- 3. All the apparatus as per ASTM B527-23 should be provided.
- 4. A balance, with a maximum weighing capacity of 0.5 kg with a accuracy of ± 0.05 g should be provided.

V. METAL POWDER FLOW RATE MEASUREMENT SYSTEM USING THE HALL FLOWMETER FUNNEL - 1 NO.

- 1. Equipment should be capable of measuring the tap density of the system as per ASTM B213-23.

PROFORMA FOR TECHNICAL COMPLIANCE SHEET
SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS
Tender No. IITM/SPS/MPL/050/2023-24/SPL

BIDDER ELIGIBILITY CRITERIA :

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) (E-43780) dated 24th August 2020. A declaration shall be submitted with the bid as per format given in Annexure – D.		
2	'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P45021/2/2017-PP (BE) 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 – E.		
3	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 – F.		
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-G.		
5	The bidder must have an aggregate financial turnover of at least Rs. 64 Lakhs in the last 3 years i.e. 2020-21, 2021-22 & 2022-23 (Should enclose the audited financial statement signed by the Chartered Accountant)		
6	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.)		
7	<p>The bidder should have supplied atleast any one identical equipment called for in the tenders to 5 different reputed Institutions like IIT/NIT/ Central or State Government / Central Research Labs / R&D units/ IISc, IISERs in India in the last five years.</p> <p>Copies of the document listed below should be submitted as a proof for the above work experience:</p> <ol style="list-style-type: none"> a. Work Order/purchase order should be submitted and also the list of similar 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. c. A global reference list as well as user list in India should be enclosed. 		

TECHNICAL SPECIFICATION:

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
I	PARTICLE SIZE ANALYSER WITH RANGE OF 0.3 NANOMETER TO 10 MICROMETER - 1 NO.		
A			
(i)	The equipment should be capable of measuring particle size, zeta potential and molecular mass. The requirements for each of these parameters are given below.		
(ii)	<u>Particle size :</u>		
(a)	Principle: Dynamic Light Scattering Principle		
(b)	Size range: 0.3 nm to 10 µm or better.		
(c)	Repeatability: ±2 % (Size)		
(d)	Maximum concentration: at least 40 % w/v or better for Particle size		
(e)	Measurement angle: At least 2 angles		
(iii)	<u>Zeta Potential :</u>		
(a)	Principle: Electrophoretic Light Scattering using Phase Angle Light Scattering		
(b)	Size range: 5 nm – 100 µm or better		
(c)	pH range 2 – 12 or better		
(d)	Zeta Potential Range: ± 500 mV or higher		
(e)	Maximum sample conductivity: 20 mS/cm or higher		
(f)	Maximum sample concentration: at least 40 % w/v or better for Zeta Potential		
(g)	Measurement angle: Forward Angle 17° or lower		
(h)	Repeatability: ± 3% (Zeta)		
(iv)	<u>Molecular-mass based on Static Light Scattering</u>		
(a)	Range: 1000 Da – 20 MDa or better,		
(b)	Measurement angle: At least at one angle.		
B.	Laser source type: Solid state laser or Gas laser with wavelength in range 532 – 660 nm with Laser Power at least 4 mW or Higher.		
C.	Detector: High resolution Avalanche Photo Diode or Photo Multiplier Tube		
D.	Measurement angles: For DLS and ELS based measurement, the instrument shall have a facility of measurement at 3 angles. The instrument shall be capable to automatically select the most appropriate angle depending on the sample characteristics. The system should have provision to vary the focus position preferably within Cuvette		
E.	(a) Temperature range for DLS and ELS: The instrument shall have a temperature control in the range of 0°C to 90°C or better for Particle size & Zeta measurements also. (b) Humidity range: the instrument shall be capable of operating in a humidity of up to 85 % non-condensing.		
F.	Power supply: Should be capable of working well in Indian power supply conditions like 220-240 V, 50 Hz AC, single-phase power supply.		
G.	The instrument should be provided with		
a.	Software:	1. Software should be capable of running the equipment, data acquisition, data analysis, data transfer, graphical presentation etc.	
		2. Should have facility to measure/display Zeta potential, conductivity, temperature, stability etc.	
		3. Should allow time-dependent study of size and Zeta potential for a single sample without changing the cuvette.	
		4. Should allow exporting of data and figures.	

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
	5. Should overlay multiple measurements.		
	6. Should mention the quality of the data obtained.		
b.	For particle size analysis:	1. 100 Nos of disposable type	
		2. 1 Nos of Glass/Quartz Cuvette	
		3. 1 No 220 nm NIST traceable standard.	
c.	Zeta Potential measurement:	1. At least 10 Nos of reusable Cells /Cuvettes with Carbon/Gold electrodes	
		2. Standard - 1 No Zeta potential reference material (If this is not a default part of the equipment supply, you may please quote it as optional item)	
H.	Computer:		
	Computer with specification of i5 with 4gb ram, 500 Gb hdd, Windows 8 or higher, 18.5" Display or better.		
I.	Additional criteria		
a.	Bidder may be asked to perform live or remote demonstration of the equipment with one of our samples at their nearest available facility.		
b.	Quote should be supported with authentic technical data sheet, brochure, and literature. Compliance sheet should be submitted along with bid with correct demarcation of specifications in spec sheet and part numbers of the quoted items		
II	PARTICLE SIZE ANALYSER WITH RANGE OF 0.02 MICROMETER TO 2000 MICROMETER OR BETTER - 1 NO.		
A.	MEASUREMENT PRINCIPAL	1. System should be based on the principle of static light scattering (laser diffraction) with laser as a light source.	
		2. System should comply with ISO 13320-1 for Particle size measurement by laser diffraction (LD) technology.	
B.	PARTICLE SIZE RANGE	1. Particle in the size range from 0.02 µm to 2,000 µm or better.	
		2. Offered system must have precision / repeatability better than 1% using certified reference standard samples.	
C.	OPTICAL MODULE	1. Laser diffraction optics should use Fourier optics or Reverse Fourier Optics configuration, as dictated in ISO 133201, Fourier optics configuration will be preferred because of its better accuracy.	
		2. Optics should have two or more lasers, nominal laser power of 3mW or more.	
		3. All lasers must be solid state diode lasers, for better stability and coherence, LED light sources not recommended.	
		4. Should have 150 or more detector elements to collect scattered light from a wide angle of 0.02° to 165°, for better sensitivity and better resolving power.	
		5. The optical design should be without any mirrors in the beam line for better sensitivity.	

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
	<p>6. The measurement algorithms for distribution estimation can be based on Mie theory / Fraunhofer theory for spherical particles and modified version of Mie theory that takes care non spherical particles.</p> <p>7. All optical components should be rigidly mounted and there should not be any moving parts or exchangeable optics.</p> <p>8. Alignment of optical components and detectors must be fully automatic and software controlled.</p>		
D.	<p>WET SAMPLE DELIVERY AND CIRCULATION SYSTEM</p> <p>1. The wet sample liquid dispersion system should be fully automated with the sampling sequences like auto filling, auto dilute, multiple rinse, drain, auto run etc. should be selectable through the software (SOP).</p> <p>2. The pump for liquid circulation must be centrifugal type pump only, peristaltic pumps are not recommended.</p> <p>3. The circulating pump must be very powerful to circulate even dense materials like refractory minerals and heavy metal powders without sedimentation.</p> <p>4. A separate auto fill pump for automatic liquid uptake from any unpressurized water or solvent reservoir must be included.</p> <p>5. The circulations system must be able to handle wide range of aqueous and organic solvents.</p> <p>6. Typical specifications for the liquid circulations system must be as follows a) Maximum permitted liquid viscosity: 5 cp or more b) Circulation volume: 200mls nominal c) Flow Rate Variable from: 0 to 65 ml / sec or more.</p> <p>7. The sample Delivery and Control system should have a variable power an in-line ultrasonic probe, with variable power and time, sonic frequency about 30 kHz or better, sonic power and time should be set and control through software (SOP).</p> <p>8. During circulation, Sample must be properly mixed by constant sample splitting and re-mixing, and create built-in turbulence to ensure that all particles are moving constantly within the flow, without a vortex formation and thereby negating the need for an external stirring.</p> <p>9. It should be possible to clean the wet sample cell easily without dismantling the cell.</p>		
E.	<p>DRY SAMPLING AND DISPERSION SYSTEM</p> <p>1. Compressed air and flow conditions settings should be automated and flexible enough to disperse even highly agglomerated materials and also fine-tuned for measurement of very fragile materials.</p>		

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
	<p>2. Sample feeding by way of a vibratory feeder or preferably with a mechanism to suck samples directly using vacuum as it will avoid de-agglomeration, sample splitting, electrostatic charging or sticking associated with vibratory feeder.</p> <p>3. Maximum pressure 50 psi (345 kPa) with a minimum flow rate 3 CFM (0.0014 m3/h) at 50 psi (345 kPa).</p> <p>4. Should be possible to work with even small volume samples down to 0.1cc. for applications where sample is expensive to produce or produced in small volumes.</p> <p>5. It is preferred that dry dispersion cell should not have glass or quartz windows to avoid need of regular cleaning, continuous cleaning can be done with circular vacuum applied around the particle stream.</p> <p>6. Equipment should be supplied with suitable compressed air source and vacuum source as per the requirement of the offered system.</p> <p>7. Changeover from Dry to Wet modules and the reverse changeover should be easy and quick.</p>		
F.	COMPUTER SYSTEM		
G.	CONTROL AND MEASUREMENT SOFTWARE		
	1. The System software must be easy to use and fully integrate the instrument control and reporting for both laser diffraction and dynamic image analysis in one graphical user interface.		
	2. Software should enable users to measure, recall, validate, export and print their analysis effortlessly, through use of SOPs.		
	3. Users should be able to set up libraries with their analysis settings, material, fluids, dispersion settings, pump speed and imaging parameters.		
	4. Compliance with FDA 21 CFR Part 11 compliant with security features that include password protection, electronic signatures, and assignable permissions.		
	5. Validation: Complete validation kit with IQ/OQ documentation must be made available.		
	6. Data Tolerance: Set Pass / Fail alerts when your material deviates from upper and lower size limits, ideal for quality control applications.		
	7. Trending: Ability to trend individual size parameters over a specific time period or material type.		
	8. Tailored Reports: Use customizable reports to present your data the way you want to see it.		
	9. Security / Data Protection: Easy to set up and administer password protected security settings including electronic signatures.		

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
	<p>10. Software should provide the following Data Handling features for laser diffraction analysis:</p> <p>a. Volume, number, and area distributions.</p> <p>b. Percentile, size, and other summary data</p> <p>c. % Passing, % Retained, and % Channel plots</p> <p>d. Selectable percentile and size points</p> <p>e. Size for any 10 percentile values from 0.01 to 100% should be made available</p> <p>f. Percentile value for any 10 size values with resolution of 0.001 microns</p> <p>g. Standard Operation Procedure (SOP) generation</p> <p>h. User defined sample loading</p> <p>i. Reference library for sample and dispersion medium refractive index</p> <p>j. Auto-sequence, Data tolerance facility</p> <p>k. Statistical data presentation, data trending</p> <p>l. Customizable reporting through software</p> <p>m. Ability to correlate data with sieve data (Sediments feature)</p> <p>n. Data export facility to Excel / ASCII / HTML / Adobe</p> <p>o. Ability to compare particle size distributions in 3D view</p> <p>p. Ability to calculate surface area (Approximation)</p> <p>q. User defined calculations and channel edges.</p>		
H.	<p>UTILITY AND OTHER REQUIREMENTS</p> <p>1. Power: Single-phase 50 Hz, 230 VAC</p> <p>2. Operating environment: 15 °C to 35 °C, less than 85% relative humidity, non-condensing</p> <p>3. If any special tools are required for installation & maintenance of equipment the same should be supplied with main system at no extra cost.</p> <p>4. Spares and consumables including standard samples required for TWO years of operation must be quotes separately.</p>		

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.		
III	MULTIPOINT BET SURFACE AREA ANALYSER SYSTEM - 1 NO.				
A.	The equipment should be capable of measuring Surface Area, Pore Size, Pore distribution & Pore volume. The measurement principle required is Volumetric method using N ₂ , Ar, CO ₂ , and or other non-corrosive gases. The System should have at least 5 nos. Gas ports or more.				
B.	Measurement: Surface area and pore size, B.E.T., STSA, adsorption isotherm, desorption isotherm. Fully automated multi-point B.E.T. analysis in as little as twenty minutes or better.				
C.	1. Relative Pressure range: 10 ⁻⁴ to 0.999. 2. Pressure Resolution: <u>Absolute Pressure:</u> 1.2 x 10 ⁻⁴ Torr & <u>Relative Pressure:</u> 1.5 x 10 ⁻⁷ p/p ₀ 3. Pressure Measurement Accuracy: At least 0.1% (of full scale) or better				
D.	Sample Preparation: Should be possible to prepare four or more samples by vacuum and flow method simultaneously with sample analysis for maximum throughput.				
E.	Sample Analysis stations: 2 or More stations for simultaneous operation with dedicated glass Po cell and transducer, Integrated Degassing station & Analysis station working simultaneously.				
F.	Power Supply: 220-240 Hz, 50 Hz, Single phase power supply.				
G.	Range of measurement: a) Specific Surface Area: At least 0.01 m ² / g to no known upper limit. b) Absolute surface area: At least 0.5 m ² / g to no known upper limit c) Pore size: 0.35 to 500 nm, depending upon gas. d) Pore volume (liquid): At least 2.2 x 10 ⁻⁶ ml / g				
H.	Degassing requirements: 4 or more Integrated degassing stations providing 2 heating zones which can run independent temperature profiles. Temperature from ambient to 425 °C, with 1°C intervals with programmable heating protocols multi-step ramp rates / hold times. The Heating mantles should have dual, independent thermocouples for over-temperature safety and should be supported by retractable tethers to eliminate hot metal clips for ease of use.				
I.	Vacuum Requirements: The system should use one Vacuum pump for analysis and de gassing, Ultimate Vacuum of 2.3 x 10 ⁻³ Torr.				
J.	Dewar life capacity: Dewar should be of at least 2L or more and should run at least for 40 hours in one refill.				
K.	Other requirements:	a) Software	To have speed of analysis the instrument data analysis software should include the DoseWizard/ VectorDose/ initial fill/ dVmax features.		
		b) Reference Material	Surface area reference materials should be supplied along with instrument.		
		c) Cryogen Level Control	Should have Automatic coolant level control mechanism for precise void volume control and minimize the cold zone volume to yield high		

Sl. No.	Specifications		Compliance Yes/No	Ref Page No.
			accuracy data or appropriate other mechanism to get a better accuracy data.	
		d) Instrument control	The whole system should be able to run through external PC and suitable data reduction software, to be supplied along with the instrument. Capability to run and view the data on the fly on the instrument touch screen is added advantage. The software should be able to record the entire degassing protocol (including each temperature ramp and soak step) and then link that to the analysis data file when the sample is analyzed, for a complete profile of the analysis parameters from pretreatment to analysis to data reduction.	
		e) RoHS	The system should be RoHS 3 / CE / BIS compliant.	
		f) Pre-Programmed Analysis Profile	The system should have the various (at least 20) ASTM/ USP/ DIN/ ISO methods preprogrammed into the instrument as readymade tool for various sample analysis.	
		g)	Successful bidder should perform live or remote demonstration of the equipment with one of our samples at their nearest available facility on IIT Madras samples.	
L.	Mandatory items	a)	High purity 99.999% with 2 stage regulator of Helium, Nitrogen, Variable cells for sample measurements.	
		b)	Computer with specification of i5 with 4gb ram, 500 Gb hdd, Windows 8 or higher, 24" LED Display or better.	
IV	METAL POWDER TAP DENSITY MEASUREMENT SYSTEM - 1 NO.			
A.	Mandatory conditions	1.	Equipment should be capable of measuring the tap density of the system as per ASTM B527-23	

Sl. No.	Specifications	Compliance Yes/No	Ref Page No.
	<p>2. Equipment should be capable of determining of tap density (packed density) of metal powders and compounds, that is, the density of a powder that has been tapped, to settle contents, in a container under ambient conditions.</p>		
	<p>3. All the apparatus as per ASTM B527-23 should be provided</p>		
	<p>4. A balance, with a maximum weighing capacity of 0.5 kg with a accuracy of ± 0.05 g should be provided</p>		
V.	METAL POWDER FLOW RATE MEASUREMENT SYSTEM USING THE HALL FLOWMETER FUNNEL - 1 NO		
1.	Equipment should be capable of measuring the tap density of the system as per ASTM B213-23.		

** 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 MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS**

Tender No. IITM/SPS/MPL/050/2023-24/SPL

Sl.No.	Item Description	Unit	Qty	Rate Per Unit	Total Cost (without GST)	GST (in %)	Total value incl. of GST
					(A)	(B)	
A.	SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS (As per technical specification in Annexure-A)						
I	PARTICLE SIZE ANALYSER WITH RANGE OF 0.3 NANOMETER TO 10 MICROMETER (As per technical specification in Annexure-A)	Nos.	1				
II	PARTICLE SIZE ANALYSER WITH RANGE OF 0.02 MICROMETER TO 2000 MICROMETER OR BETTER (As per technical specification in Annexure-A)	Nos.	1				
III	MULTIPOINT BET SURFACE AREA ANALYSER SYSTEM (As per technical specification in Annexure-A)	Nos.	1			ENTER AND SUBMIT THE FINANCIAL BID IN THE CPP (e-PROCUREMENT POTAL)	
IV	METAL POWDER TAP DENSITY MEASUREMENT SYSTEM (As per technical specification in Annexure-A)	Nos.	1				
V	METAL POWDER FLOW RATE MEASUREMENT SYSTEM USING THE HALL FLOWMETER FUNNEL (As per technical specification in Annexure-A)	Nos.	1				
B	OPTIONAL EXTENDED WARRANTY FOR 3 YEARS AFTER STANDARD WARRANTY						
I	PARTICLE SIZE ANALYSER WITH RANGE OF 0.3 NANOMETER TO 10 MICROMETER – 1 No. (As per technical specification in Annexure-A)						
	3 rd Year						
	4 th Year						
II	PARTICLE SIZE ANALYSER WITH RANGE OF 0.02 MICROMETER TO 2000 MICROMETER OR BETTER – 1 No. (As per technical specification in Annexure-A)						
	3 rd Year						
	4 th Year						
III	MULTIPOINT BET SURFACE AREA ANALYSER SYSTEM- 1 No. (As per technical specification in Annexure-A)						
	3 rd Year						
	4 th Year						
	5 th Year						

Sl.No.	Item Description	Unit	Qty	Rate Per Unit	Total Cost (without GST)	GST (in %)	Total value incl. of GST
					(A)	(B)	
IV	METAL POWDER TAP DENSITY MEASUREMENT SYSTEM- 1 No. (As per technical specification in Annexure-A)						
	3 rd Year						
	4 th Year						
	5 th Year						
V	METAL POWDER FLOW RATE MEASUREMENT SYSTEM USING THE HALL FLOWMETER FUNNEL – 1 No. (As per technical specification in Annexure-A)						
	3 rd Year						
	4 th Year						
	5 th Year						
C	OPTIONAL AMC OF THE EQUIPMENT FOR A PERIOD OF 2 YEARS AFTER THE EXTENDED WARRANTY						
I	PARTICLE SIZE ANALYSER WITH RANGE OF 0.3 NANOMETER TO 10 MICROMETER (As per technical specification in Annexure-A)						
	6 th Year						
	7 th Year						
II	PARTICLE SIZE ANALYSER WITH RANGE OF 0.02 MICROMETER TO 2000 MICROMETER OR BETTER (As per technical specification in Annexure-A)						
	6 th Year						
	7 th Year						
III	MULTIPOINT BET SURFACE AREA ANALYSER SYSTEM- 1 No. (As per technical specification in Annexure-A)						
	6 th Year						
	7 th Year						
IV	METAL POWDER TAP DENSITY MEASUREMENT SYSTEM- 1 No. (As per technical specification in Annexure-A)						
	6 th Year						
	7 th Year						
V	METAL POWDER FLOW RATE MEASUREMENT SYSTEM USING THE HALL FLOWMETER FUNNEL – 1 No. (As per technical specification in Annexure-A)						
	6 th Year						
	7 th Year						

Note:

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

1. The technical specification will be evaluated for each line item separately. The Lowest rate quoted for each line item by the technically qualified bidder will alone be taken for L1 rate evaluation for that particular item. The order for that item will be awarded to the successful bidder (L1). Order will be awarded for L1 of each line item and not to the overall L1 bidder.
2. Optional Extended Warranty and Optional AMC will not be considered for price bid evaluation to arrive the L1 rate.

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

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

Tender No. IITM/SPS/MPL/050/2023-24/SPL

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**

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

Tender Reference Number: Tender No. IITM/SPS/MPL/050/2023-24/SPL

Name of the item / Service: SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS

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) 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) Dt.16th September 2020 & P- 45021/102/2019-BE 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.

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

Tender Reference Number: Tender No. IITM/SPS/MPL/050/2023-24/SPL

Name of the item / Service: SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS

(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

Tender Reference Number: Tender No. IITM/SPS/MPL/050/2023-24/SPL

Name of the item / Service: SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS

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.

Please mention Country of Origin

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

Tender Reference Number: Tender No. IITM/SPS/MPL/050/2023-24/SPL

Name of the item / Service: SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS

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

Self-Declaration by the bidder

I hereby declare that spare parts and accessories will be available for smooth operation over at least 15 years from the date of installation. However, the consumables and parts required for the system's installation and standardisation should be given free of cost.

Place:

Date:

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

Tender Reference Number: Tender No. IITM/SPS/MPL/050/2023-24/SPL

Name of the item / Service: SUPPLY OF MATERIALS PROCESSING LAB EQUIPMENT AT IIT MADRAS

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

Self-Declaration by the bidder

I hereby declare that I/we shall provide local presence of qualified engineer(s) for prompt and efficient after sales services for at least next 10 years and also shall establish local application laboratory to assist you for regular assistance for your samples/methods/data interpretations.

Place:

Date:

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