



**INDIAN INSTITUTE OF TECHNOLOGY, KANPUR**

**GT ROAD, KALYANPUR, KANPUR – 208016**

**UTTAR PRADESH, INDIA**

**TENDER REFERENCE NO.: IITK/BSBE/AKS/21-22/NC-01**

**BID SUBMISSION END DATE: July 6<sup>th</sup> 2021**

**GLOBAL TENDER ENQUIRY REF. NO.: IITK/12**

**TENDER DOCUMENTS**

For

**“Establishing the cryo-EM Facility”**

## **BID DOCUMENT**

The Indian Institute of Technology Kanpur (“the IITK”) invites Bids (“Bids”) from eligible, qualified and capable companies for the supply and delivery of “the Goods” and provision of associated services (“Associated Services”) according to the requirements as defined in the Tender document.

Name of Work	Establishing the cryo-EM Facility
<b>Date of Publishing</b>	08.06.2021 (16.00 hrs)
Clarification Start Date and Time	08.06.2021 (16.00 hrs)
Clarification End Date and Time	06.07.2021 (16.00 hrs)
Queries (if any)	No queries will be entertained after clarification end date and time.
<b>Bid Submission Start Date</b>	08.06.2021 (16.00 hrs)
Last Date and time of uploading of Bids	06.07.2021 (16.00 hrs)
Last Date and time of <b>submitting</b> , EMD and other documents at IIT Kanpur (if any)	NA
Date and time of opening of Technical Bids	07.07.2021 (16.00 hrs)
Date and time of opening of Financial Bids	Will be separately notified for Technically shortlisted/qualified bidders.

Interested parties may view and download the tender document containing the detailed terms & conditions from the website <http://eprocure.gov.in/eprocure/app>

**(The bids must be submitted online in electronic form on [www.eprocure.gov.in](http://www.eprocure.gov.in) only. No physical bids will be accepted.)**

**(A)**  
**INSTRUCTION FOR ONLINE BID SUBMISSION**

The bidders are required to submit soft copies of their bids electronically on the Central Public Procurement (CPP) Portal ie <http://eprocure.gov.in/eprocure/app> , 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.

**1. REGISTRATION**

- (i) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal (URL:<https://eprocure.gov.in/eprocure/app>) by clicking on the link “Online Bidder Enrolment” option available on the home page. **Enrolment on the CPP Portal is free of charge.**
- (ii) During enrolment/ registration, the bidders should provide the correct/ true information including valid email-id & mobile no. All the correspondence shall be made directly with the contractors/ bidders through email-id provided.
- (iii) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- (iv) For e-tendering possession of valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) is mandatory which can be obtained from SIFY /nCode/eMudra or any Certifying Authority recognized by CCA India on eToken/ SmartCard.
- (v) Upon enrolment on CPP Portal for e-tendering, the bidders shall register their valid Digital Signature Certificate with their profile.
- (vi) Only one valid DSC should be registered by a bidder. Bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse and should ensure safety of the same.
- (vii) Bidders can then log into the site through the secured login by entering their userID/ password and the password of the DSC/ eToken.

**2. SEARCHING FOR TENDER DOCUMENTS**

- (i) 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.
- (ii) 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 Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- (iii) 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.

**3. PREPARATION OF BIDS:**

- (i) For preparation of bid Bidders shall search the tender from published tender list available on

site and download the complete tender document and should take into account corrigendum if any published before submitting their bids.

After selecting the tender document same shall be moved to the 'My favourite' folder of bidders account from where bidder can view all the details of the tender document.

- (ii) Bidder shall go through the tender document carefully to understand the documents required to be submitted as part of the bid. Bidders shall 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.
- (iii) Any pre-bid clarifications if required, then same may be obtained online through the tender site, or through the contact details given in the tender document.
- (iv) Bidders should get ready in advance the bid documents in the required format (PDF/xls/rar/dwf/jpg formats) to be submitted as indicated in the tender document/schedule. **Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document.**
- (v) Bidders can update well in advance, the documents such as experience certificates, annual report, PAN, EPF & other details etc., under "My Space/ Other Important Document" option, which can be submitted as per tender requirements. This will facilitate the bid submission process faster by reducing upload time of bids.

#### **4. SUBMISSION OF BIDS:**

- (i) Bidder should log into the site well in advance for bid submission so that he/ she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay.
- (ii) Bidder should prepare the EMD as per the instructions specified in the NIT/ tender document. The details of the DD/BC/BG/ others physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise the uploaded bid will be rejected.
- (iii) While submitting the bids online, the bidder shall read the terms & conditions (of CPP portal) and accepts the same to proceed further to submit their bid.
- (iv) Bidders shall select the payment option as offline to pay the EMD and enter details of the DD/BC/BG/others.
- (v) Bidder shall digitally sign and upload the required bid documents one by one as indicated in the tender document.
- (vi) Bidders shall note that the very act of using DSC for downloading the tender document and uploading their offers is deemed to be a confirmation that they have read all sections and pages of the tender document without any exception and have understood the complete tender document and are clear about the requirements of the tender document.
- (vii) Bid documents may be scanned with 100 dpi with black and white option which helps in reducing size of the scanned document. For the file size of less than 1 MB, the transaction uploading time will be very fast.
- (viii) **If price quotes are required in XLS format, utmost care shall be taken for uploading Schedule of quantities & Prices and any change/ modification of the price schedule shall render it unfit for bidding.**

**Bidders shall download the Schedule of Quantities & Prices i.e. Schedule-A, in XLS format and save it without changing the name of the file. Bidder shall quote their rate in figures in**

the appropriate cells, thereafter, save and upload the file in financial bid cover (Price bid) only.

If the template of Schedule of Quantities & Prices file is found to be modified/corrupted in the eventuality by the bidder, the bid will be rejected and further dealt as per provision of clause no 23.0 of ITB including forfeiture of EMD.

The bidders are cautioned that uploading of financial bid elsewhere i.e. other than in cover 2 will result in rejection of the tender.

- (ix) Bidders shall submit their bids through online e-tendering system to the Tender Inviting Authority (TIA) well before the bid submission end date & time (as per Server System Clock). **The TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bids online by the bidders at the eleventh hour.**
- (x) After the bid submission (i.e. after Clicking “Freeze Bid Submission” in the portal), the bidders shall **take print out of system generated acknowledgement** number and keep it as a record of evidence for online submission of bid, which will also act as an entry pass to participate in the bid opening.
- (xi) Bidders should follow the server time being displayed on bidder’s dashboard at the top of the tender site, which shall be considered valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system.
- (xii) All the documents being submitted by the bidders would be encrypted using PKI (Public Key Infrastructure) encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology.
- (xiii) Bidder will get all benefits under Rule 153 GFR-2017.

#### 5. ASSISTANCE TO BIDDERS:

- (i) 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. The contact number of end user is 0512-259-4058. Please call between 10:30 hrs to 17:00 hrs .
- (ii) 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 24 x 7 Help Desk Number 0120-4200462, 0120-4001002 and 0120-4001005. The helpdesk email id is [support-eproc@nic.in](mailto:support-eproc@nic.in)

**(B)**  
**INSTRUCTION FOR e-PROCUREMENT**

**1. PREPARATION AND SUBMISSION OF BIDS:**

- a. The detailed tender documents may be downloaded from <http://eprocure.gov.in/eprocure/app> till the last date of submission of tender. The Tender may be submitted online through CPP Portal <http://eprocure.gov.in/eprocure/app>
- b. The bidder should submit the bid online in two parts viz. Technical Bid and Financial Bid. Technical Bid should be upload online in cover 1 and Financial Bid in “.Xls” should be upload online in cover-2

**2. SUBMISSION OF THE BID :**

All interested eligible bidders are requested to submit their bids online on CPP Portal: <http://eprocure.gov.in/eprocure/app> per the criteria given in this document:

- a. Technical Bid should be upload online in cover-1.
- b. Financial Bid should be upload online in cover-2

Both Technical and Financial Bid covers should be placed online on the CPP Portal (<http://eprocure.gov.in/eprocure/app> ).

**3. TECHNICAL BID:**

Signed and Scanned copies of the Technical bid documents as under must be submitted online on CPP Portal: <http://eprocure.gov.in/eprocure/app> .

- a. **List of Documents to be scanned and uploaded (Under Cover-1) within the period of bid submission:-**
  - i. Scanned copy of Bank details.
  - ii. Scanned copy of work experience.
  - iii. Scanned copy of certificate of GST.
  - iv. Scanned copy of specifications/brochures & tender acceptance letter on Appendix 1-3.
  - v. Scanned copy of another document mentioned in tender document (if any)
  - vi. Declaration for local content, Country of Origin of goods and Bid Security on Appendix 4-5.
    1. For The tender value upto Rs. 10 Crores - Self-Certificate for local content from the bidder.
    2. For the tender value above Rs. 10 Crores - Certificate for local content from Statutory Auditor/Cost Auditor/Cost Accountant/CA.
- b. **For Import Shipments – Shipping Terms Ex-Works/FOB are preferred.**

**NOTE - no indication of the rates/amounts be made in any of the documents submitted with the TC-BID.**

**4. FINANCIAL BID**

- a. The currency of all quoted rates shall be Indian Rupees/USD/Euro.
- b. In preparing the financial bids, bidders are expected to take into account the requirements and conditions laid down in this Tender document. The financial bids should be uploaded online as per the specified “.Xls” format i.e. Price Bid Excel sheet attached as ‘.Xls’ with the tender and based on the scope of work, service conditions and other terms of the Tender document. It should include all costs associated with the Terms of Reference/Scope of Work

of the assignment.

- c. The Financial Proposal should be inclusive of all applicable taxes, duties, fees, levies, and other charges imposed under the applicable laws. The rates quoted in the Tender are inclusive of all applicable taxes, duties etc. **except service tax**. The service tax component shall be re-immersible by the department after receipt of paid challans etc. if applicable.

**5. LAST DATE FOR SUBMISSION OF TENDER:**

- a. Online bids complete in all respects, must be submitted on or before the last date and time specified in the schedule of events.
- b. The IIT, Kanpur may, at its own discretion, alter/extend the last date for submission of tenders.

**6. BID VALIDITY**

- a. All the Bids must be valid for a period of 90 days from the last date of submission of the tender for execution of Contract. However, the quoted rates should be valid for the initial/extended period of the Contract from the effective date of the Contract. No request will be considered for price revision during the original Contract period.
- b. A bid valid for a shorter period shall be declared as non-responsive.
- c. In exceptional circumstances, prior to expiry of the original time limit, the IIT may request the bidders to extend the period of validity for a specified additional period beyond the original validity of 90 days. The request and the bidders' responses shall be made in writing. The bidders, not agreeing for such extensions will be allowed to withdraw their bids without forfeiture of their Bid Security.

**7. MODIFICATION / SUBSTITUTION/ WITHDRAWAL OF BIDS:**

- a. No Bid shall be modified, substituted or withdrawn by the Bidder after the Bid's due Date.
- b. Any alteration/ modification in the Bid or additional information supplied subsequent to the Bid's due Date, unless the same has been expressly sought for by the Authority, shall be disregarded.

**8. REJECTION OF THE BID:**

The bid submitted shall become invalid and tender fee shall not be refunded if:-

- a. The bidder is found ineligible.
- b. The bidder does not upload all the documents as stipulated in the bid document.

**9. SELECTION CRITERIA:**

**Phase-I: Technical Evaluation & Sample Approval**

Technical evaluation will be done on the basis of information given by technical bid submitted by the bidders. Bid containing partial, incomplete, uncleared and superfluous and unwanted information will be summarily rejected.

Technical declaration must be supported with relevant document. Discrepancy in relevant supporting document and technical compliance sheet shall lead to rejection of technical bids.

**Sample Approval:**

Bidders should have to display their samples (if asked) on a suitable date at the Central Store & Purchase Section of IIT Kanpur. Non-display of sample shall be considered as non-responsive technical bids.

**Phase-II**

- a. Financial bids of technically qualified and approve samples bidders shall be opened.
- b. Financial evaluation is purely done on the total financial implication.
- c. Any superfluous, unreasonable assets rate quotes will be summarily rejected.

**10. Late Delivery:**

Delivery must be completed within the period mentioned in tender document from the date of receipt of the order. Penalty @ 1% per week or part thereof subject to a maximum of 10% of the delivery price will be deducted from the balance payment if supply is not completed within stipulated period.

**11. Instruction to the bidder of countries which share land border with India (Rule 144(xi) GFRs)**

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Department for Promotion of Industry and Internal Trade (DPIIT).
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company , including any member of a consortium or joint venture (that is an association of several persons, or firms or companies) , every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means: -
  - a. An entity incorporated, established, or registered in such a country; or
  - b. A subsidiary of an entity incorporated, established, or registered in such a country; or
  - c. An entity substantially controlled through entities incorporated, established, or registered in such a country; or
  - d. An entity whose beneficial owner is situated in such a country; or
  - e. An Indian (or other) agent of such an entity; or
  - f. A natural person who is a citizen of such a country; or
  - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above



**IV.** The beneficial owner for the purpose of (iii) above will be as under:

1. In case of a company or Limited Liability Partnership , the beneficial owner is the natural person(s), who , whether acting alone or together , or through one or more juridical person, has a controlling ownership interest or who exercises control through other means .

**Explanation-**

- a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company.
  - b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholders agreements or voting agreements.
2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
  3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who , whether acting alone or together , or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of individuals ;
  4. Where no natural person is identified under (1) or (2) or (3) above, the beneficial owner is the relevant natural person who holds the position of senior managing official.
  5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee , the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership .

**V.** An Agent is a person employed to do any act for another, or to represent another in dealings with third person.

**VI.** In case of tenders for Works contracts, including Turnkey contracts, The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority .

**12.** As per the Ministry of Commerce and Industry Order No. P-45021/2/2017-PP(BE-II) dated 04.06.2020 preference shall be given to Make in India products for which it is mandatory for bidders to declare Country of Origin of goods and percentage of Local contents in the product.

**Definitions:**

“Local Content” means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all customs duties) as a proportion of the total value, in percent.

“Class-I local supplier” means a supplier or service provider, whose goods, services or works offered for procurement, has local content to or more than 50%, as defined under this order.

“Class-II local supplier” means a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%, as defined under this order.

“Margin of purchase preference” means the maximum extent to which the price quoted by a Class-I local supplier may be above the L1 for the purpose of purchase preference. (shall be 20%)

**Purchase Preference:**

- (a) Subject to the provisions of this Order and to any specific instructions issued by the Nodal Ministry or in pursuance of this Order, purchase preference shall be given to ‘Class-I local supplier’ in procurements undertaken by procuring entities in the manner specified here under.
- (b) In the procurements of goods or works, which are covered by para 3(b) above and which are divisible in nature, the Class-I local supplier' shall get purchase preference over 'Class-II local supplier' as well as 'Non-local supplier', as per following procedure:
  - i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is Class local supplier', the contract for full quantity will be awarded to L1.
  - ii. If L1 bid is not a 'Class-I local supplier', 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the 'Class-I local supplier' will be invited to match the L1 price for the remaining 50% quantity subject to the Class-I local supplier's quoted price falling within the margin of purchase preference, and contract for that quantity shall be awarded to such 'Class-I local supplier' subject to matching the L1 price. In case such lowest eligible 'Class-I local supplier' fails to match the L1 price or accepts less than the offered quantity, the next higher 'Class-I local supplier' within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such balance quantity may also be ordered on the L1 bidder.
- (c) In the procurements of goods or works, which are covered by para 3(b) above and which are not divisible in nature, and in procurement of services where the bid is evaluated on price alone, the 'Class-1 local supplier' shall get purchase preference over 'Class-ul local supplier' as well as 'Non-local supplier', as per following procedure:
  - i. Among all qualified bids, the lowest bid will be termed as L1. If L1 is 'Class-1 local supplier', the contract will be awarded to L1.
  - ii. If L1 is not 'Class-1 local supplier', the lowest bidder among the 'Class-I local supplier', will be invited to match the L1 price subject to Class-I local supplier's quoted price falling within the margin of purchase preference, and the contract shall be awarded to such 'Class-I local supplier' subject to matching the L1 price.
  - iii. In case such lowest eligible 'Class-1 local supplier' fails to match the L1 price, the 'Class-1 local supplier' with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the 'Class-1 local supplier' within the margin of purchase preference matches the L1 price, the contract may be awarded to the L1 bidder.
- (d) "Class-II local supplier" will not get purchase preference in any procurement, undertaken by procuring entities.

**(C)**  
**COMMERCIAL TERMS AND CONDITIONS**

**1. DEFINITIONS**

These Commercial Terms and Conditions shall constitute the General Conditions of Contract, where no separate contract is signed with the selected Bidder(s), and, the Bidders by putting their signature and stamp on each page of this Section V are binding themselves to these Terms and Conditions. In the Commercial Terms and Conditions as defined below, words and expressions shall have the following meanings assigned to them:

- a. "Contract" means the agreement of the Parties relating to the procurement of Goods and / or the IITK Purchase Order (PO), and all attachments incorporated by reference, which shall form an integral part of the Contract. In the event of any discrepancy, the documents to prevail shall be given precedence in the following order: (i) the Contract (where separately signed), (ii) the IITK Purchase Order, (iii) its attachments, and (iv) these Commercial Terms and Conditions;
- b. "Contractor" means the person or entity named in the 'CONTRACTOR' named field of the IITK Purchase Order and any agreed in writing by the IITK legal successor(s) in title;
- c. "Day" means any calendar day;
- d. "Delivery Date" means the latest possible date by which the Goods shall be delivered by the Contractor to the IITK, as specified in the 'DELIVERY DATE' named field of the IITK Purchase Order;
- e. "Force Majeure" shall mean any unforeseeable exceptional situation or event beyond the Parties' control which prevents either of them from fulfilling any of their obligations under the Contract, was not attributable to error or negligence on their part (or of their partners, contractors, agents or employees), and could not have been avoided by the exercise of due diligence. Defects in equipment or material or delays in making them available, labour disputes, strikes or financial problems cannot be invoked as Force Majeure by the defaulting Party. Neither of the Parties shall be held liable for breach of its obligations under the Contract if it is prevented from fulfilling them by Force Majeure. The Party invoking Force Majeure shall notify the other without delay, stating the nature, likely duration and foreseeable effect, and take any measure to minimise possible damage;
- f. "Goods" means all of the goods to be supplied to the IITK by the Contractor under the Contract;
- g. "IITK" means the Indian Institute of Technology Kanpur;
- h. "IITK Purchase Order" means the IITK's official Purchase Order document;
  - (i) "Party" means the IITK or the Contractor and "Parties" means the IITK and the Contractor; and
  - (ii) "Place(s) of Delivery" means the location(s) or place(s) where the Goods are to be delivered, as specified in the 'SHIP TO' named field of the IITK Purchase Order.

**2. CONCLUSION OF THE CONTRACT**

- 2.1. The Contract is made between the IITK and the Contractor. The Contractor is engaged as an independent contractor for the sole purpose of delivering the Goods.
- 2.2. The Contract shall be concluded upon the Contractor duly following the countersigning

procedure as stated in the IITK Letter of Intent (LOI).

### **3. FUNDING**

This Contract shall become and remain effective only on the condition that an official Purchase Order is issued by IITK following the conclusion of tender exercise. In the event this is not or no longer shall the case, the IITK without unreasonable delay notify the Contractor thereof.

Any continuation of the Contractor's performance under this Contract after being notified by the IITK shall be at the Contractor's risk and expense.

### **4. DELIVERY AND TAKE-OVER OF GOODS**

The Contractor shall deliver the Goods at the Place(s) of Delivery. On behalf of the IITK, a duly authorised representative(s), shall take-over the Goods upon delivery. Take-over of the Goods by the IITK shall not be deemed acceptance of the Goods by the IITK. The time of delivery as specified in the Contract / PO shall be strictly adhered to, and time shall be of the essence.

### **5. QUALITY OF GOODS**

**5.1.** The Contractor shall deliver Goods that are:

- a. of the quality, quantity and description as required by the Contract / PO; and
- b. free from any right or claim of a third party, including rights based on industrial property or other intellectual property.

**5.2.** Should the Goods be of the type "homogeneously defined" or disposable, the Contractor shall provide a sample and undertake, certify, and guarantee that all Goods delivered shall be of the same quality and characteristics as the sample(s) provided.

### **6. INSPECTION AND ACCEPTANCE**

**6.1.** The duly authorised representative(s) of the IITK shall have the right, before payment, to inspect the Goods either at the Contractor's stores, during manufacture, at the ports and/or in places of shipment, or at the Place(s) of Delivery. The Contractor shall provide all facilities for such inspection. The IITK may issue a written waiver of inspection. Any inspection carried out by representative(s) of the IITK or any waiver thereof shall be without prejudice to other provisions of the Contract concerning obligations assumed by the Contractor, including specifications of the Goods.

**6.2.** Upon delivery and inspection of the Goods, the IITK shall inspect the goods as soon as possible and complete the Goods Receiving Document. Should any Goods fail to conform to the technical specifications, codes and standards under the Contract, the IITK may reject the Goods. The Contractor shall, at no cost to the IITK, replace the rejected Goods or, alternatively, rectify the non-conformity.

**6.3.** In the case of Goods ordered on the basis of specifications or samples, the IITK shall have the right to reject the Goods or any part thereof and terminate the Contract if the Goods do not conform to the specifications and/or samples. Nothing in this clause shall in any way release the Contractor from any warranty or other obligations under the Contract.

### **7. SHIPPING AND INSURANCE**

For overseas orders, shipping arrangements shall be co-ordinated by IITK. Original shipping documents including the packing list shall be airtailed/mailed by the Contractor to the (Assistant Registrar (S&P), IIT, Kanpur – 208 016, UP, India).

## **8. OBSERVANCE OF LAW AND EXPORT LICENCES**

The Contractor shall comply with all laws, ordinance, rules and regulations bearing upon the performance of its obligations under the terms of the Contract. If an export licence or any other governmental authorisation is required for the Goods, it shall be the obligation of the Contractor to obtain such licence or governmental authorisation. In the event of the Contractor's failure to obtain such licence or authorisation within a reasonable time, the IITK may immediately terminate the Contract. Where the award procedure or execution of the Contract is vitiated by substantial errors or irregularities or by fraud, the IITK shall suspend execution of the Contract.

Where such errors, irregularities or fraud are attributable to the Contractor, the IITK may also refuse to make payments or may recover monies already paid, in proportion to the seriousness of the errors, irregularities or fraud. The purpose of suspending the Contract shall be to verify whether presumed substantial errors and irregularities or fraud have actually occurred. If they are not confirmed, execution of the Contract shall resume as soon as possible. A substantial error or irregularity shall be any infringement of a contract or regulatory provision of India, resulting from an act or an omission that causes or might cause a financial loss.

## **9. PRICE**

The price of the Goods shall be as stated in the Purchase Order and may not be increased.

## **10. PAYMENT**

- 10.1.** Unless otherwise stipulated in the Purchase Order, the IITK shall make payment within thirty (30) Days of the later of:
  - a.** Successful delivery of the goods to IITK as confirmed by the consignee (Assistant Registrar, Store & Purchase, IIT-Kanpur), endorsed by the indenter and approved by the indenters' Head of Department / Section;
  - b.** Receipt of customary shipping documents and any other documents specified in the Contract; and (c) Receipt of the original invoice issued by the Contractor.
- 10.2.** All invoices shall be in original and shall contain the IITK Purchase Order number, and a description, the quantities, unit and total price(s) of the Goods delivered. The currency of invoice and payment shall be as specified in the Purchase Order. Unless otherwise authorised by the IITK, a separate invoice shall be submitted for each shipment under the Contract / PO. Subject to Clause 11 below ('Tax Exemption'), if applicable, the GST amount shall be separately identified in the invoice.
- 10.3.** Payments shall be made in the currency stated in the Contract / PO, on the basis of the equivalent value of INR on the day of payment and paid directly into the nominated bank account.
- 10.4.** The IITK shall not pay any charge for late payments.

## **11. TAX EXEMPTION**

The Contractor's price shall reflect any tax exemption to which the IITK is entitled. If it is subsequently determined that any taxes that have been included in the price are not required to be paid or if, having been paid, any such taxes are subject to refunding, the IITK shall deduct the amount from the Contract price. Payment of such adjusted amount shall constitute full payment by the IITK. In the event that any taxing authority refuses to recognize the IITK's exemption from taxes, the Contractor shall immediately consult with the IITK to determine a mutually acceptable procedure for settling the applicable amount.

## **12. WARRANTY**

- 12.1.** The Contractor warrants that the Goods furnished under the Contract conform to the technical specifications, description and standards specified in the Contract, and are new and unused, and free from defects in design, workmanship and/or materials.
- 12.2.** The Contractor shall provide a warranty for the Goods for a period of one year from the date of acceptance of the Goods by the IITK, unless the standard manufacturer's warranty period is longer in which case the longer period shall apply.
- 12.3.** In the case of "homogeneously defined" or disposable goods, should any portion of the Goods, at any time, not comply with clause 5.1 or 5.2 herein or otherwise prove to be defective, the Contractor shall, upon written notification from the IITK, replace that portion of the Goods and bear all costs associated with the replacement of same.

### **13. PACKING**

- 13.1.** The Goods shall be packed and marked in a proper manner and in accordance with the Contract and any statutory requirements and any requirements of the carrier(s). In particular, the Goods shall be marked with the IITK Purchase Order number and the net, gross and tare weights, the name of the contents shall be clearly marked on each container and all containers of hazardous goods (and all documents relating thereto) shall bear prominent and adequate warnings.
- 13.2.** The Contractor shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination. The packing shall be sufficient to withstand, without limitation, rough handling during transit. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the final destination and the absence of appropriate handling facilities at all points in transit.
- 13.3.** All packaging materials shall be non-returnable.

### **14. DEFAULT AND DAMAGES**

- 14.1.** If due to reasons attributable to the Contractor, the Contractor fails or refuses to:
  - a.** deliver any or all of the Goods under the Purchase Order;
  - b.** comply with any or all of the terms and conditions set out in the Purchase Order; or
  - c.** deliver any or all of the Goods under the Purchase Order on or before the Delivery Date; the IITK may hold the Contractor in default under the Purchase Order.
- 14.2.** When the Contractor is thus in default, the IITK may, by written notice to the Contractor, immediately terminate the Purchase Order in whole or in such part or parts thereof in respect of which the Contractor is in default.
- 14.3.** Alternatively, to clause 14 above when the Contractor is thus in default, the IITK may, at its own discretion, set a reasonable period of time for the Contractor to remedy its default. Any new Delivery Date shall be specified in a written amendment to the Purchase Order, duly countersigned by the Contractor.
- 14.4.** The IITK may, at its discretion, impose penalties upon the Contractor calculated in accordance with clause 15 for each Day the Contractor is late in delivering the Goods past the Delivery Date initially specified in the Purchase Order.
- 14.5.** If the Contractor does not remedy its default within the period of time accorded under clause 16, the IITK may, by written notice to the Contractor, terminate the Purchase Order with immediate effect.
- 14.6.** Upon any termination of the Purchase Order, in whole or such part(s) thereof in respect of which the Contractor is in default, the IITK may engage another contractor to deliver the Goods and recover any difference in price and any additional costs from the Contractor.
- 14.7.** The Contractor shall indemnify the IITK for all losses, charges, costs and expenses, which the IITK may suffer or incur as a result the Contractor's default, including those resulting from engaging another contractor pursuant to this clause 14.

## **15. PENALTIES**

If, in accordance with clause 15, the IITK imposes penalties on the Contractor, such penalties shall amount to One percent (1%) of the total Purchase Order price for each week following the initial Delivery Date specified in the Purchase Order but shall not amount to more than Ten percent (10%) of the total Purchase Order value. The penalties for the delay may be deducted by IITK from any sum(s) due, or to become due, by the IITK to the Contractor.

## **16. DELAY NOT ATTRIBUTABLE TO THE CONTRACTOR**

If the Contractor is delayed at any time in the delivery of the Goods or fulfilment of any other of the Contractor's obligations by any act or omission of the IITK, or by any of its officials, or by any separate contractor(s) contracted by the IITK, or by changes ordered in the type and/or quantity of the ordered Goods, or the Place(s) of Delivery, or any causes beyond the Contractor's reasonable control, or by any other cause, which the IITK determines may reasonably justify the delay, the Delivery Date of the Goods, or fulfilment of any other of the Contractor's applicable obligations shall be extended for such reasonable period of time as the IITK and the Contractor mutually determine. The set reasonable period of time and any amended delivery date shall be specified in a written amendment to the Contract / PO, duly countersigned by the Contractor.

## **17. FORCE MAJEURE**

As soon as possible after the occurrence of any event constituting Force Majeure, but no later than three (3) Days, the Contractor shall give notice and full particulars in writing to the IITK of the Force Majeure. If the Contractor is thereby rendered unable, wholly or in part, to meet its obligations under the Contract, the IITK may terminate the Contract / PO with immediate effect by providing written notice to the Contractor.

## **18. INDEMNITY**

- 18.1.** The Contractor shall indemnify, hold and save harmless and defend at its own expense the IITK, and all of the foregoing's officials, agents, servants and employees from and against all suits, claims, demands and liability of any nature or kind, including costs and expenses, arising out of acts or omissions of the Contractor or its employees, agents or subcontractors in the performance of the Contract.
- 18.2.** Clause 18 shall include, without limitation, claims and liabilities in the nature of workmen's compensation and claims and liabilities arising out of the use of patented inventions or devices.

## **19. ASSIGNMENT**

- 19.1.** The Contractor shall not assign, transfer, pledge or make other disposition of the Purchase Order or any part thereof or of any of the Contractor's rights, claims or obligations under the Purchase Order except with the express written consent of the IITK. Any assignment made without such consent shall be void and of no effect.
- 19.2.** The Contractor shall not subcontract any of its obligations under the Contract / PO without the express written consent of the IITK. The IITK may require the Contractor to furnish particulars of the proposed subcontract as the IITK deems necessary.
- 19.3.** The IITK's approval of any subcontracting shall not relieve the Contractor from any liability or obligation under the Contract. In any subcontract, the Contractor agrees to bind the subcontractor by the same terms and conditions by which the Contractor is bound under the Contract / PO.

## **20. INSOLVENCY AND BANKRUPTCY**

**20.1.** Should the Contractor become insolvent or should control of the Contractor change by virtue of insolvency, the IITK may with immediate effect and without prejudice to any other right or remedy available to it, suspend the performance of the Contractor's obligations or terminate the Purchase Order with immediate effect, by providing the Contractor with written notice thereof.

**20.2.** Should the Contractor be adjudged bankrupt, or should the Contractor make a general assignment for the benefit of its creditors, or should a receiver be appointed on account of the Contractor's insolvency, the IITK may, without prejudice to any other right or remedy available to it, terminate the Purchase Order with immediate effect by providing the Contractor with written notice thereof.

## **21. TERMINATION**

**21.1.** The IITK shall have the right to terminate the Purchase Order or any of the provisions thereof at any time by serving a three days' notice to the Contractor.

## **22. WAIVER**

A waiver of any breach of or default under the Contract / PO shall not constitute a waiver of any other breach or default and shall not affect the other terms of the Contract / PO. The rights and remedies provided by the Purchase Order are cumulative and are not exclusive of any other rights or remedies.

## **23. ADVERTISING**

The Contractor shall not advertise or otherwise make public the fact that it is a contractor to the IITK. The Contractor shall not in any way use the name, emblem, logo, official seal, or any abbreviation of the IITK.

## **24. DISCRETION AND CONFIDENTIALITY**

The Contractor is required to exercise the utmost discretion in all matters relating to the Contract / Purchase Order. Unless required in connection with the performance of the Purchase Order or expressly authorised in writing by the IITK, the Contractor shall not disclose at any time to any third party any information which has not been made public and which is known to the Contractor by reason of its association with the IITK. The Contractor shall not, at any time, use such information to any private advantage. These obligations do not lapse upon any completion, expiration, cancellation or termination of the Contract / PO.

## **25. NOTICES**

Any notice given in connection with the Contract shall be given in English and in writing and shall be deemed to be validly given if sent by registered mail or by fax or by email to the other Party at the following:

- a. for the IITK: the contact details set out in the 'IITK BUYER' name field of the Purchase Order; and
- b. for the Contractor: the contact details set out in the 'CONTRACTOR' named field of the IITK Contract/Purchase Order.

## **26. STAFF MEMBERS NOT TO BENEFIT**

The Contractor shall not grant to any official of the IITK any direct or indirect benefit or preferential treatment on the basis of the Purchase Order or the award thereof. Any breach of this provision shall constitute a fundamental breach of the Purchase Order.

## **27. GOVERNING LAW**



The Contract shall be governed by and construed in accordance with the substantive laws of the Republic of India.

## **28. SETTLEMENT OF DISPUTES**

**28.1.** The Parties shall use their best efforts to negotiate and amicably settle any disputes, controversies or claims arising out of, or in connection with, the Contract / Purchase Order or its interpretation.

**28.2.** If the Parties fail to settle the dispute amicably within thirty (30) Days of commencement of the negotiations, the dispute shall be settled through arbitration. One (1) sole arbitrator shall be appointed by the Director of IITK who shall have full powers to make final and binding decisions subject to prevailing laws of India. The appointing authority shall be the Director of IITK. The place of arbitration shall be Kanpur and the language used in the arbitration proceedings shall be English.

## **29. PRIVILEGES AND IMMUNITIES**

No provision of the Contract / Purchase Order shall be deemed, or interpreted as, a waiver of the privileges and immunities enjoyed by the IITK.

## **30. AMENDMENTS**

No modification, amendment or change to the Contract/Purchase Order, or waiver of any of its provisions, or any additional contractual relationship with the Contractor shall be valid unless approved in the form of a written amendment to the Contract/Purchase Order, signed by a fully authorised representative of each Party.

## **31. VALIDITY**

The invalidity in whole or part of any condition of the Contract / Purchase Order or clause thereof shall not affect the validity of the remainder of such condition or clause.

## **32. ENTIRE AGREEMENT**

The Contract / Purchase Order constitute the entire agreement and understanding of the Parties and supersede any previous agreement, whether orally or in writing, between the Parties relating to the subject matter of the Contract.

## **33. GOVERNING LANGUAGE**

The Contract / Purchase Order shall be executed in the English language which shall be the binding and controlling language for all matters relating to the meaning and interpretation of the Contract / Purchase Order.

**India Institute of Technology, Kanpur  
Kalyanpur, Kanpur 208016, India**

Tender Reference Number: IITK/BSBE/AKS/21-22/NC-01

Technical Specifications for the purchase of

**Cryogenic-Electron Microscopy (cryo-EM) set-up**

# Technical specifications:

## A. Cryo-Electron microscope:

### **A1. Acceleration voltage:**

The acceleration voltage should be 300kV with a possibility to change from 80 kV to 300kV, variable either in steps or continuous, and factory alignment at 80kV, 200kV and 300 kV.

### **A2. Electron source:**

The electron source in the cryo-electron microscope should either be of Field Emission Schottky type or cold Field Emission Gun (X-FEG) emitter type, capable of generating very bright, stable and coherent electron beam with an energy spread of  $\leq 1.0$  eV.

### **A3. Magnification:**

The magnification range should be a minimum of around  $\sim 50x$  or less to a maximum  $\sim 1.2Mx$  or higher magnification: A point resolution of 0.25 nm or better, and information limit of 0.14 nm or better.

### **A4. Cooling system:**

The cooling system should be of the close circuit type with automatic temperature and flow rate controlled water-cooled chiller.

### **A5. Lens system:**

The lens system in the cryo-electron microscope should consist of condenser lens, objective lens, diffraction, intermediate and projection lenses for providing an intensely focused parallel beam for high resolution, phase-contrast, low dose imaging and high dose imaging for electron diffraction. The beam intensity should be user selectable, and documentary proof of quantitative values for convergence angle, size of illumination and electron dose should be provided. The intermediate and projector lenses should have the following characteristics: the range of camera lengths in diffraction mode should be 300-5000 mm or better at 300 kV. The magnification range should be  $50x - 450,000x$  or better, with reproducibility within  $\pm 1.5\%$ , and should produce distortion and rotation-free images. The system should have a constant power objective lens, with minimal aberrations at eucentric point. All

lens systems should have low hysteresis, and fast switching between operation modes should be possible. The following aperture holders are required: an objective aperture holder, with at least two apertures appropriate for different imaging conditions; two condenser aperture holders (C1 and C2), each with at least four apertures; a selected area aperture holder, with at least four apertures. All aperture holders must be motorized to maximize the degree of automation. In addition, a CS corrector that maintains a negative spherical aberration coefficient ( $C_s$ ) to cancel positive  $C_s$  of the objective and condenser lenses, which are axially-symmetric magnetic field lenses should also be included with the cryo-EM system.

#### **A6. Vacuum System:**

The microscope should have suitable vacuum system with a fully automatic, differential, oil-free pumping system and ion-getter/sputter ion pumps. The pumps should be adequate in number for column, gun and specimen chambers, to maintain pressure in the gun area  $\leq 10^{-7}$  Pa, and that column  $\leq 10^{-6}$  Pa. Appropriate vacuum pump for camera section should also be included. A fully automatic sequential control for the operation of vacuum pumps is required. Pumping time should be less than 60 minutes from start to optimal vacuum and the vacuum recovery time after specimen exchange should be less than 10 minutes. The vacuum pump should be quieter than the computer so that there will be minimum vibrations and thereby virtually no impact on imaging.

#### **A7. Autoloader/automated specimen exchange system:**

An automatic system with a loading capacity of twelve grids with minimal breaks in vacuum is required. Specimen insertion, inspection of the grid, recording of initial image and grid exchange should be quick in the span of 30 minutes or less. The grid exchange mechanism should be automated, reliable and free of ice contamination. The specimen holder should be able to tilt up to at least  $\pm 70^\circ$ . Rotation of the specimen to at least  $90^\circ$  in plane for dual-axis tomography is desirable. In plane rotation at angles other than  $90^\circ$  is also agreeable. All accessories required for operation in cryo- as well as ambient temperature, and to meet the conditions mentioned above, should be provided. Additional two extra autoloader cassette/automated specimen exchange system should be provided.

#### **A8. Specimen chamber:**

The stage should be computer-controlled and its position should be highly reproducible. After a specimen movement of  $500\mu\text{m}$  in x and y, the microscope should relocate to the same sample position with a reproducibility of  $\leq 0.5\mu\text{m}$  in x and y, the m. Microscope should have a fully Eucentric goniometer with a maximum tilt in the range of  $\pm 70$  ( $\pm 1.0$  mm) degrees or higher X movement range:

2 mm in total or more Y movement range: 2 mm in total or more Z movement range: 0.20mm in total or more with a specimen grid size of 3mm. The maximum sample drift rate should be 0.01 nm/s after complete equilibration. The specimen drift rate should be  $\leq 0.25$  nm/s or better, and  $\leq 0.05$  nm/s or better, after 30 minutes and 90 minutes of specimen exchange respectively. The specimen height should be adjustable to allow eucentric tilting. The eucentricity during  $\pm 70^\circ$  tilting should be  $\leq 2\mu\text{m}$  in x and y, the m in X and Y, and  $\leq 4\mu\text{m}$  in x and y, the m in Z (defocus change).

## **A9. Direct electron detector:**

Direct electron detector camera with at least 4Kx4K pixels, minimum 250 frames per second (fps) or better, functional at 200 and 300kV with real-time fast counting and super-resolution or integration read out modes, with radiation hardened back-thinned sensor with sensor lifetime of at least 500 million e/pix and automated magnification calibration. An extra microprocessor chip for direct electron detector should be provided within the warranty period as and when required.

The detector and software provided should be able to perform sub-pixel averaging for more accurate determination of incident electrons and also preferably running in a Correlated Double Sampling (CDS) mode to minimize the read noise. The detector should allow visualization of Thon rings in a high-dose image from an amorphous carbon or Pt-Ir specimen out to the Nyquist resolution in the Fourier transform of an image that is at least 4Kx4K pixels. Camera compatibility should be ensured for either in-column or post-column energy filter as per the specifications provided below.

Standard and suitable computer(s) for the operation of the direct detector that are factory fitted and tested with pre-loaded, licensed software for trouble free operation of the system should be included. Option for high-speed attached RAID storage is required for the PC (using Fiber Channel). A complete software suite for all camera functions, low dose readout and low dose automated data acquisition is required. The software controlling the detector is expected to be fully embedded into the operating system of the microscope. Automatic data collection and image acquisition, and camera control should be from the same software platform. The software should include a range of pre-configured settings for operating voltages between 80 and 300kV that can be easily selected for the use with appropriate standard samples. The software interface for live-remote monitoring of the collection and images as they are being collected should also be installed and tested.

It is expected that the images, data and metadata acquired, and subsequently analyzed and/or manipulated by the user will be saved in a default format that is widely compatible with other software packages. Details of the proposed software should be included in the tender submission along with any known, or suspected,

incompatibilities with other packages. It should be possible to export the acquired data and metadata from the system in multiple formats (e.g. .mrc, .tiff, .jpeg, .png, .txt, .xls etc).

A proper frame alignment software, to align the movie frames of collected movie images using the detector, should be supplied. In line/off line motion correction software with latest NVIDIA GPU hardware workstation should be provided. The preferable configuration for the GPU workstation should include scalable 2X Intel-Xeon CPU processors, a minimum of eight (or more) GPU cards, a minimum of 100TB hard drive capacity (or better).

It is necessary that remote access to, and analysis or manipulation of, data and images is available to users while the detector is collecting primary data. The proposed system should have a high-speed transmission capacity (e.g. 10Gb/s (ten Gigabit/second) Ethernet or equivalent). The safety controls must be implemented in software as well as in hardware for protecting the operators, instruments and specimens. The software(s) should be updated as required, free of cost.

#### **A10. CMOS based camera:**

An additional fast live CMOS scintillation-based readout with minimum 4Kx4K pixels, CMOS sensor, pixel size 14 $\mu$ m in x and y, usable at 80 to 300 kV, capable of large field of view with video capture of 25fps or better at full resolution should be included. It should be optimized for experiments such as single-particle, tomography and low dose techniques such as micro-electron diffraction, and it should be compatible with image as well as video recording mode. This camera should be bottom mounted, retractable, compatible with high-resolution CMOS camera of minimum 4KX4K pixel at 25 fps with full resolution of 4Kx4K, and optimal for automated operation with a direct detection camera. The camera should be fully embedded with data collection/application software and hardware.

#### **A11. Phase plate:**

An automated phase plate activation measurement system should be included with the system, and specific details such as the of phase plate, stability, location and expected contrast enhancement should be clearly outlined. As a benchmark, it is expected that the phase plate should be able to enhance the contrast by a factor of 1.4 or more. All the associated consumables and accessories required for efficient operation and usage of the phase plate together with the cryo-EM set-up should be included.

## **A12. Energy filter:**

The microscope should have either an in-column or a post-column energy filter consisting of Filter Optics and Direct Electron Detector as the Detector, for possible usage at 80, 200 and 300kv, for single-particle imaging and studies of cellular organization and ultrastructure at low electron dose. The Energy Filter is expected to have a 9mm entrance aperture with a magnification of preferably <6x (entrance aperture and detector) and with a slit width covering 3eV minimum - 140eV maximum for 200 and 300kV operating voltages. Direct detection camera should have capability of real time fast counting and super-resolution or integration read out modes and with a 1500 fps Sensor read out preferably. The physical pixel size of the detector is expected to be smaller; preferably 5µm. The detector and software provided should be able to do sub-pixel averaging for more accurate determination of incident electrons, and preferably running in a Correlated Double Sampling (CDS) mode to minimize the read noise.

## **A13. Environment:**

The system should preferably be in an enclosure and protected from interference by an outer shell. The enclosure must ensure thermal and acoustic shielding with  $\leq 0.5^{\circ}\text{C}$  temperature or 20dBC variation. Remote operation of the microscope should be possible.

## **A14. User Interface:**

Fully computer-controlled system with windows based software for operating the Microscope along with keyboard, mouse. Software: Licensed, latest version software for automatic image acquisition for single particle, tomography, and electron diffraction; single particle reconstruction and analysis, and tomographic reconstruction should be supplied, installed and supported by the vendor. Any updated versions, when available, should be provided free of cost till the end of the warranty period. Any known or suspected incompatibilities with other licensed or open source software should be clearly mentioned in the bid. It is expected that the data acquisition software should have pre-configured settings that can be easily selected for use with the appropriate standard samples. The software should be compatible with direct electron detection camera. Further, use of open source software (e.g. Serial EM) should be permissible without affecting warranty of the equipment. It should be possible to export the acquired data and metadata from the system in multiple formats (eg. mrc, .tiff, .jpeg, .txt, .xls etc). The software should have a browser version to allow users an off-line capability to view images, export data & images as well as carrying out basic processing & analyzing functions. It is expected that such a browser would be free, or of minimal cost, and ideally available for Windows, Mac and Linux operating systems. The software controlling all

detectors/cameras is expected to be fully embedded into the operation system of the microscope. The software and hardware provided should allow the remote controlled operation, including remote diagnosis and servicing. The safety controls must be implemented in software as well as in hardware for protecting the operators, instrument and specimens. Control Panel and Joystick-or track-ball Control panel including multifunction keys/knobs for control and adjustment of TEM parameters (focus, magnification etc.) and manual joystick or track-ball control for stage in X,Y,Z tilt and rotation directions.

#### **A14. Work Station and Software:**

Data storage and computational infrastructure with latest workstation to collect and process movie on the fly. Adequate computational infrastructure for data recording and storage along with all required accessories should be provided with the system. Software to operate the system, record data, and store and analyze data should be provided. Suitable for screening samples for subsequent single-particle reconstruction (SPR) studies. Tomography Software for automatic control and reconstruction. Image file in JPEG, TIFF & BMP formats and other formats compatible with widely used image processing software. Backup software must be provided on optical media. Any further version of the software and updates must be provided free of cost. Separate computer (s) should be provided for offline data analysis. Overall, the computational infrastructure provided should allow smooth operation of the system and analysis of the recorded data. Appropriate software for automated and manual operation, automated and manual data collection in all modes requested above and downstream data analysis for all applications (including single particle and tomography reconstruction) should be provided, as described before. A tape writer for writing and storing the data in compressed form in tapes should also be provided with the workstation.

#### **A15. Pre-installation requirements:**

The supplier should provide complete technical details of pre-installation requirements along with the technical bid to ensure the site-preparation in advance of the shipment.

#### **A16. Installation:**

The entire process of installation, interfacing of the main system with its subsystems, and commissioning should be carried out by well-trained and technically competent engineers from the supplier. After installation, a complete demonstration of all the features of the cryo-EM set-up should be included using the samples provided by the end-user, and the demonstration should meet the expectation of the end-users with complete satisfaction.



## **A17. Site preparation requirements:**

The provider must also arrange for appropriate site preparation requirements such as fixed humidity controller, attenuation of vibration and noise cancellation, and electromagnetic interference (EMI), from both alternating (AC) and direct (DC) current should be minimized, and monitoring system. The site preparation should include requirements are for an ISO 8 (Class 100,000) cleanroom environment, dust-free, quiet, stable temperature with low relative humidity, proper acoustics cryo-EM operation, EMI and vibration. All the walls in the microscope room should be made acoustically “dead” by 50mm-thick cloth-covered fiberglass sound absorbent. Also, the air currents should be minimized by planting the air inlets along the side of the room possibly distant from the microscope column so that a laminar flow down the wall and across the floor is maintained.

## **B. Sample preparation accessories:**

### **B1. Sputter coater and Glow discharge system:**

A sputtering and carbon/gold coating system with a turbo pump to reach high vacuum and a glow discharge unit capable of hydrophobic to hydrophilic conversion (and vice-versa) of grids should also be included with the cryo-EM set-up. Easy-change sputter targets – gold/palladium (Au/Pd) standard and unit for Gold sputter coating should also be provided. The glow discharge should be possible for in-air or in-chemical vapor, without downtime for cleaning or the risk of contamination and loss of samples, which essentially mean that glow discharge unit should have two different chambers to avoid cross-contamination. Glow discharge unit should be able to automatically control the air or gas delivery, perform purge cycles and adjust sample stage heights to minimize sample loss.

### **B2. Automatic plunge freezer:**

A cryogenic plunging device with movable climate control chamber, automated adjustment of temperature (4-60°C or more), humidity up to 99% or more, defogger/window heater for a clear view of the chamber, windows for inserting pipette on both sides of the chamber, programmable touch screen control panel, complete flexibility to set and adjust pre-blotting, blotting and hold time, and adjustable positioning of grids, couple of cryogenic container for plunge-freezing, two coolant containers with anti-contamination rings, two (or more) ethane or propane cups, two ethane tanks with the regulators, all the required accessories like cryo-tool dryer, grid box, insulating forceps, blotting papers, hole punch to create blotting papers with 55mm outer diameter and 20mm inner diameter, etc. should be included with the set-up.

### **C. Accessories with the cryo-EM set-up:**

The provider should include appropriate chiller units, compressors, UPS and other necessary accessories manufactured by a reputed vendor for optimal and efficient operation of the cryo-EM set-up. In addition, a separate UPS unit, dedicated solely for the water chiller should also be included. An additional set of autogrid loading system accessories, same as delivered with the cryo-EM set-up including assembly workstation, loading dock, tweezers, transfer dewars etc. should also be included.

An automatic filling system for liquid N<sub>2</sub>, two liquid N<sub>2</sub> dewars of 240L capacity or more with liquid N<sub>2</sub> level detection sensor should be included, in addition to a LN<sub>2</sub> transfer dewar of 25-35L capacity, each with roller base, tipping stand, 6-foot transfer hose, and cryogen phase separator. Two dry shipper similar to or CX100 for transportation of biological samples at cryogenic temperatures and two ethane tanks with the regulators and two 4L dewars should be provided. Two sample storage dewars with a capacity of 35L with roller base, tipping stand and N<sub>2</sub> level detection sensor should be included.

A set of 200 or more of each of autocliper cups, rings, cryogenic grid storage boxes variety pack should also be included. Twenty or more cryo-pucks for storing grid boxes in sample storage dewars should also be included. In addition, a cryo tool dryer with combination of ventilation heating and heating plate, Quincy lab oven for warming cryo tools, five cryo-forceps with straight tip and five forceps with insulation coating, two cryo-boxes for sample manipulation with magnetic holders for the trisection pod, a cryo-transfer box and puncher for sample carriers should be included. Plasma cleaner for cleaning cryo-holders, cryo transfer station, cold stage controller, dry pumping stations and all cryo-tools etc. for holders should be provided.

### **D. Technical expertise and on-site personnel requirement**

**D1.** As the system is likely to be heavily used by multiple users across the country, it is desirable that the supplier has installed at least one, fully-functional, equivalent set-up in India, and several (>30) equivalent systems across the world. It is essential to enclose the information related to installation in India and worldwide of similar set-up along with feedback and performance report from at least one user in India and three different users worldwide.

**D2.** One of the key research goals is to drive the structural biology of human membrane proteins, especially those which are important drug targets such as GPCRs and ion channels. Therefore, a list of research publications and details of high-resolution structures for such proteins, generated using similar cryo-EM platforms, should also be enclosed.

**D3.** The supplier should provide one trained personnel, for a period of five years, with at least one year of extensive experience and training in operating and maintenance of the proposed cryo-EM system, and all related equipment. The said personnel will assist with installation of the set-up, and training research scholars and fellows using the facility to facilitate independent, effective and precise operation. The said personnel will be involved in all aspects of data collection, assisting the users, and data processing.

## **E. Comprehensive warranty requirements**

**E1.** It is mandatory to provide five (05) years of comprehensive warranty for the entire cryo-EM set-up (i.e. microscope, sample preparation equipment, hardware and software related to computational support). The comprehensive warranty must include the entire cost of every aspect related to uninterrupted operation of the set-up such as parts, labor and services from the date of completion of installation.

**E2.** As a part of comprehensive warranty, the on-site attendance time from the first notification of a problem with either the system or accessory equipment should not be more than 48 hours i.e. two days. In case of any part to be replaced, the timeframe to fix it should not be more than three days after the part has come through customs clearance. If these timelines are not followed, an extension of comprehensive warranty by five days should be provided for each day of non-compliance.

**E3.** It is expected that the comprehensive warranty will cover each and every part; however, in case, any specific parts are exempted from warranty, a list of such items, together with their expected lifetime, should be enclosed. It is mandatory to include two, free of cost replacements, of the FEG source, within the comprehensive warranty period of 5 years.

**E4.** The supplier should enclose documentation to ensure the availability of spare parts and repair kits as required, and technical support for the microscope and all associated equipment, for up to a period of ten (10) years from the date of installation.

## F. Computational infrastructure for cryo-EM data processing:

In addition to the computational requirement for optimal operation of the cryo-EM set-up, additional computational infrastructure of cryo-EM data collection and/or processing should be provided with the following specifications:

	Item description	Quantity
<b>1</b>	<b>Master Node:</b>	<b>1</b>
	2 x Intel Xeon Platinum 8380HL (3.20GHz/128-core/250W/4608memory) Processor/16 x 64GB Dual Rank Memory Kit/4 x 1.2TB SAS/ 2GB Cache RAID Controller/ 2 x 10Gb Adapter/2 x HDR100 100Gb 2-port/ 1 x 1G Management Port / RPS with 5 years support	
<b>2</b>	<b>Type I: AI Nodes with V100 32GB (512GB)</b>	<b>2</b>
	2 x Intel Xeon Platinum 8380HL (3.20GHz/128-core/250W/4608memory) Processor/16 x 64GB Dual Rank Memory Kit / 3 x 3.8TB SATA SSD/ 9X14TB SATA/ 2GB Cache RAID Controller/ 2 x 10GbE/ 2 x IB HDR100 Adapters/16 x NVIDIA RTX 3090 24GB Computational Accelerator/1 x 1G Management Port/ RPS with 5 years support	
<b>3</b>	<b>2PB Parallel File System with 10GBps WR Performance:</b>	<b>1 Set</b>
3.a	<b>MDS Nodes: 2U or better rack mount server with the following:</b>	<b>2</b>
	2 x Intel Xeon Platinum 8380HL (3.20GHz/128-core/250W/4608memory) Processor / 512GB (8 x 64GB) / 2 x 600GB 10k SAS disks/ RAID controller – for internal and external connectivity as per solution requirement/ 4 x 1G / IB HDR100 1P Adapter / 1 x 1G Management Port/ RPS	
3.b	<b>OSS Nodes: 2U or better rack mount server with the following:</b>	<b>2</b>
	2 x Intel Xeon Platinum 8380HL (3.20GHz/128-core/250W/4608memory) Processor / 512GB (8 x 64GB) / 2 x 600GB 10k SAS disks/ RAID controller(s) – for internal and external connectivity as per solution requirement / 4 x 1G / IB HDR100 1P Adapter /1 x 1G Management Port / RPS	
3.c	<b>Metadata Storage with the following:</b>	<b>1</b>
	* 5 x 300GB 10k SAS Disks or more	
	* 17 x 600GB 10k SAS disks or more	
3.d	<b>OST Storage: - With the following as per solution requirement:</b>	<b>1 Set</b>
	* Dual IO Module with 12G SAS Host ports – Qty as per solution requirement	
	* Usable capacity of min. 2 PiB. Necessary number of disks to be provided as per performance requirement. Should include at least 2 % hot spares.	
<b>4</b>	<b>Switches and Accessories</b>	
<b>4.a</b>	Mellanox InfiniBand HDR 40-port QSFP56 Managed Back to Front Airflow Switch with required splitter cables of appropriate length.	<b>1</b>
<b>4.b</b>	24 Port, 1 Gbps (RJ-45) Ethernet Switch for Secondary Communication Purpose	<b>1</b>
<b>4.c</b>	24 Port, 1 Gbps (RJ-45) Ethernet Switch for management.	<b>1</b>

**F1.** In addition to the specifications mentioned in the Table above, this set-up should also include the following features:

Dual Socket P (LGA 3647) support 2nd Gen Intel® Xeon® Scalable processors (Cascade Lake/Skylake); 24 DIMMs; up to 6TB 3DS ECC DDR4-2933MHz± RDIMM/LRDIMM, Supports Intel® Optane™ DCPMM; 20 PCI-E 3.0 x16; 1 PCI-E 3.0 x8 (FH, FL in x16 slot); 24 Hot-swap 3.5" drive bays or 22 Hot-swap 3.5" drive bays + 2 U.2 NVMe 2.5" drives; 2x 10GBase-T LAN ports; 8 Hot-swap 92mm RPM cooling fans; 2000W (2+2) Redundant Power Supplies Titanium Level (96%+); each server and workstation should be supported by 7 KV UPS with at least 30min power back up; each workstation should include 36" (or larger) Dell desktop with high definition screens.

**F2.** The supplier should also provide one trained personnel, for a period of five years, with at least one year of extensive experience and training in operating and maintenance of computational infrastructure related to cryo-EM system. The said personnel will assist with installation, training researchers, and troubleshooting related to interfacing of the cryo-EM with data processing set-up.

**Terms and Conditions:**

1. All equipment must be compatible with Indian electrical standards and codes. Engineering documentation on the physical sizes and weights of all major and minor components must be submitted.
2. IIT Kanpur is fully exempted from payment of GST on Imported Goods against our DSIR certificate.
3. IIT Kanpur is partially exempted from payment of Customs Duty (We will provide Custom Duty Exemption Certificate, CD applicable is 5.5%).
4. TENDER Specific Manufacturer Authorization Form from OEM Required.
5. The Institute reserves the right of accepting or rejecting any/all quotations without assigning any reason thereof.
6. All prices should be **F.O.R.**
7. Installation by OEM is preferred.
8. Bids from separate providers for the microscope component (A-E) and Computation infrastructure (F) are acceptable.

**TENDER ACCEPTANCE LETTER**  
**(To be given on Company Letter Head)**

Date: \_\_\_\_\_

To,

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sub: Acceptance of Terms & Conditions of Tender.

Tender Reference No: \_\_\_\_\_

Name of Tender / Work: -

\_\_\_\_\_

Dear Sir,

1. I / We have downloaded / obtained the tender document(s) for the above mentioned 'Tender/Work' from the web site(s) namely: \_\_\_\_\_ as per your advertisement, given in the above mentioned website(s).
2. I / We hereby certify that I / we have read the entire terms and conditions of the tender documents from Page No. \_\_\_\_\_ to \_\_\_\_\_ (including all documents like annexure(s), schedule(s), etc .,), which form part of the contract agreement and I / we shall abide hereby by the terms / conditions / clauses contained therein.
3. The corrigendum(s) issued from time to time by your department/ organisation too have also been taken into consideration, while submitting this acceptance letter.
4. I / We hereby unconditionally accept the tender conditions of above mentioned tender document(s) / corrigendum(s) in its totality / entirety.
5. I / We do hereby declare that our Firm has not been blacklisted/ debarred/ terminated/ banned by any Govt. Department/Public sector undertaking.
6. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organisation shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely.

**Yours Faithfully,**  
**(Signature of the Bidder, with Official Seal)**

**Certificate for Tender**  
**(To be given on Company Letter Head)**

Date: \_\_\_\_\_

To,

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sub: Certificate of compliance as per Rule 144 (xi) GFR's 2017

Tender Reference No: \_\_\_\_\_

Name of Tender / Work: -

\_\_\_\_\_

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

**Yours Faithfully,**  
**(Signature of the Bidder, with Official Seal)**

**Certificate for Tender for Works involving possibility of sub-contracting**  
**(To be given on Company Letter Head)**

Date: \_\_\_\_\_

To,

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sub: Certificate of compliance as per Rule 144 (xi) GFR's 2017

Tender Reference No: \_\_\_\_\_

Name of Tender / Work: -

\_\_\_\_\_

"I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this bidder is not from such a country or, if from such a country, has been registered with the Competent Authority and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I hereby certify that this bidder fulfills all requirements in this regard and is eligible to be considered. [Where applicable, evidence of valid registration by the Competent Authority shall be attached.]"

**Yours Faithfully,**  
**(Signature of the Bidder, with Official Seal)**



**Declaration for Local Content**

**(To be given on Company Letter Head - For tender value below Rs.10 Crores)  
(To be given by Statutory Auditor/Cost Auditor/Cost Accountant/CA for tender value  
above Rs.10 Crores)**

Date: \_\_\_\_\_

To,  
The Director,  
Indian Institute of Technology Kanpur,  
GT Road, Kalyanpur, Kanpur -208016

Sub: Declaration of Local content

Tender Reference No: \_\_\_\_\_

Name of Tender / Work: -  
\_\_\_\_\_

4. Country of Origin of Goods being offered: \_\_\_\_\_
5. We hereby declare that items offered has \_\_\_\_\_% local content.

*“Local Content”* means the amount of value added in India which shall, be the total value of the item being offered minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

*“\*False declaration will be in breach of Code of Integrity under Rule 175(1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.”*

**Yours Faithfully,  
(Signature of the Bidder, with Official Seal)**

**Bid Security Declaration**  
**(To be given on Company Letter Head)**

Date: \_\_\_\_\_

To,  
The Assistant Registrar  
Central Stores  
IIT Kanpur-208016

**Sub: Certificate for bid security declaration**

Tender Reference No : \_\_\_\_\_

Tender ID : \_\_\_\_\_

Name of Tender / Work: -  
\_\_\_\_\_

"I/We have read the clause regarding Bid Security Declaration/Earnest Money Deposit and I/We are fully aware that if I/We withdraw or modify the bid during the period of validity I may be suspended for a period of 3 years ."

**Yours Faithfully,**  
**(Signature of the Bidder, with Official Seal)**