राष्ट्रीय विज्ञान शिक्षा एवं अनुसंधान संस्थान, भुवनेश्वर
(परमाणु उर्जा विभाग, भारत सरकार का एक स्वयं शासित संस्थान)
NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
(AN AUTONOMOUS INSTITUTE UNDER DEPT. OF ATOMIC ENERGY, GOVT. OF INDIA)

Notice Inviting E-Tender No.40/2017-NC-000813-PHY-16-17(2 Part Tender)

MATERIAL PREPARATION UNIT

Cost of Tender is 1500.00 (Non Refundable)

Paper Notice

NATIONAL INSTITUTE OF SCIENCE EDUCATION & RESEARCH
JATNI CAMPUS, P.O. - JATNI
KHURDA – 752050, ODISHA, INDIA

Notice Inviting E-Tender No. 40/2017-NC-000813-PHY-16-17 (2 Part Tender)

Sealed Tenders are invited on behalf of the Director, National Institute of Science Education and Research, Jatni from the manufacturers(Indian or Foreign) and their authorised reseller/Indian agentonly for supply & installation of the following items:-

Sl. No.	*Name of the Items*	*Tender No.*	*Name of Department*	*Indent No.*	*Qty.*	*EMD in INR*
01	Material Preparation Unit	NIT-40/2017	School of Physical Sciences	NC-000813-PHY-16-17	01 No.	4,63,581.00

Tender can be downloaded and bided from website address: www.tenderwizard.com/NISER. Tender documents for viewing only is also available inNISER web-site address: www.niser.ac.in.

Stores & Purchase Officer

NATIONAL INSTITUTE OF SCIENCE EDUCATION & RESEARCH
JATNI CAMPUS, P.O. –BHIMPUR-PADANPUR, VIA-JATNI
KHURDA – 752050, ODISHA, INDIA

Notice Inviting E-Tender No. 40/2017-NC-000813-PHY-16-17 (2 Part Tender)

E- Tenders are invited on behalf of the Director, National Institute of Science Education and Research, Jatni from the manufacturers(Indian or Foreign) and their authorised reseller/Indian agentonly for supply & installation of the following items:-

Sl. No.	*Name of the Items*	*Tender No.*	*Name of Department*	*Indent No.*	*Qty.*	*EMD in INR*
01	Material Preparation Unit	NIT-40/2017	School of Physical Sciences	NC-000813-PHY-16-17	01 No.	4,63,581.00

NB: PARTIES REGISTERED WITH SSI/DGS&D/DAE AND FOREIGN PARTIES QUOTING DIRECTLY ARE EXEMPTED FROM PAYING EMD. There is no exemption for TENDER FEE.

Standard eTender Terms & Conditions

1. The details of tender notification can be downloaded from www.tenderwizard.com/NISER under "**Tender Free View"** link.
2. Vendors should obtain the USER ID and PASSWORD from www.tenderwizard.com/NISER by clicking on "**REGISTER ME**" link in the homepage.
3. The Vendor registration fees has to be paid to ITI Ltd for Rs. 1180/- including GST. Using the e-payment link provided at the time of registration, and the mode of payments are Credit Card, Debit Card and Internet Banking. Vendor Registration is Valid for 1year.
4. For further details on e-Tender participation, please contact ITI Help desk on

- Telephone: 080-49352000/9686115318
- Email: harishkumar.kb@etenderwizard.com, ambasa@etenderwizard.com.

5. Tenders should be submitted only through e-Tender portal and obtain the Tender Acknowledgement copy as a proof of successful submission.

Stores & Purchase Officer

NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH
NIT OPEN DOCUMENT (2 PART BID)

SUPPLY & INSTALLATION OF
MATERIAL PREPARATION UNIT

Notice Inviting E-Tender No. 40/2017-NC-000813-PHY-16-17(2 Part Tender)

National Institute of Science Education & Research (NISER), Jatni is an Autonomous Institute under Dept of Atomic Energy. NISER would like to procure the following equipment. The Technical Specifications Schedule of Requirements and Allied Technical details are given in Part-1 of tender document.

•**Item:** Material Preparation Unit
• **Tender Enquiry No:** NIT-40/2017

.Last date of submission of e-bid-12.03.2018 up to 11.30 A.M
• **Opening of Technical Bids: 12**.03.2018 at 2.30 P.M
.Date and Time of Pre-Bidding–23.02.2018 at 2.30 p.m at SPS Conference Hall.
Contact Person - Dr. S Bedanta (Email – sbedanta@niser.ac.in)

E-tenders are invited for supply and installation of **MATERIAL PREPARATION UNIT** in the National Institute of Science Education & Research, Jatni.

(Deepak Srivastava)
Stores & Purchase Officer

The Institute can provide following documents.
1. **Custom Duty exemption certificate.**
2. **GST Exemption Certificate**

COST OF TENDER IS RS.1500/- (NON REFUNDABLE).
This is payable in cash or Demand Draft of a scheduled Bank in favour of Director, NISER payable at Bhubaneswar/Jatni

PART - 1
TERMS & CONDITIONS
FOR SUPPLY AND INSTALLATION OF
MATERIAL PREPARATION UNIT
FOR
NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH, JATNI
Notice Inviting E-Tender No. 40/2017-NC-000813-PHY-16-17 (2 Part Tender)

1. Director,National Institute of Science Education & Research, Jatni(NISER) invites sealed tenders for **MATERIAL PREPARATION UNIT** from the Manufacturer and their authorised reseller only having following credentials.

   A. Should have satisfactorily completed **similar supply** (at least one of them in Central Government/Central Autonomous Body/Central PSU)

   B. Similar or Similar Nature of work means Supply & Installation of **MATERIAL PREPARATION UNIT** for any of the following :

   a)Government/Autonomous Institutions
   b) Government Research Centres
   c) Universities
   d) Autonomous/Reputed Private Research Centres
   e) Purchase Orders / Completion certificates if any, for supporting above requirements.

The Bidders are requested to give detailed tender in the prescribed forms in two Bids
i.e. Part - I Technical Bid.
Part - II Commercial Bid.

3. Contact for information:(Only E-mail enquiries will be entertained)

For Technical Information of MATERIAL PREPARATION UNIT:
Dr. S. Bedanta,
Associate Professor,
School of Physical Sciences, NISER.
E-Mail – sbedanta@niser.ac.in

For Information regarding Commercial & all other Terms & Conditions:
Deepak Srivastava
Stores & Purchase Officer
National Institute of Science Education & Research, Jatni
E-Mail-spo@niser.ac.in

3.Supply means:
"Supply, Installation, Commissioning and satisfactory demonstration of the whole equipments".
If any charges extra are payable for Installation and Commissioning, the same should be specified in the commercial offer.

4. Tender Document:
The Technical Offer should comprise of the following:
a) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.

b) The technical offer should be complete to indicate that all products and services asked for are quoted. Each page of the bid and cutting/corrections shall be duly signed and stamped by the bidder. Unsigned Tenders will also be rejected. Failure to comply with this requirement may result in the bid being rejected.

c) The purpose of certain specific conditions is to get or procure best product/service etc. for NISER. The opinion of Technical Committee shall be the guiding factor for technical short listing.

d) The earnest money deposit as indicated against the item should be send by post so that it reaches on or before the opening of the technical bid for e-tender system in the form of Account Payee Bank Draft payable on any branch of Nationalised/Schedule Bank at Bhubaneswar/ Jatni in favour of "Director, National Institute of Science Education & Research, Jatni", in a separate sealed envelope. All tenders submitted without requisite amount of earnest money shall be rejected and their technical and financial bids shall not be opened. No interest is payable on EMD.

The EMD will be returned to the bidders(s)/Agents whose offer is not accepted by NISER within one month from the date of the placing of the final order(s) on the selected bidder(s). In case of the bidder(s) whose offer is accepted the EMD will be returned on submission of Performance Bank Guarantee (if applicable). However, if the return of EMD is delayed for any reason, no interest /penalty shall be payable to the bidders.

EMD EXEMPTION:

PARTIES REGISTERED WITH SSI/DGS&D/DAE AND FOREIGN PARTIES QUOTING DIRECTLY ARE EXEMPTED FROM PAYING EMD. FOREIGN PARTIES QUOTING DIRECTLY UNDER ORIGINAL SEAL AND SIGNATURE (NOT SCANNED) WILL GET THE EXEMPTION.

The EMD shall be forfeited:

If the bidder withdraws the bid during the period of bid validity specified in the tender. In case a successful bidder fails to furnish the Performance Bank Guarantee (if applicable).

e) Undertaking that the successful bidder agrees to give a Performance Bank Guaranty of 10% of the purchase order value in favour of "Director, National Institute of Science Education & Research, Jatni valid till warranty period.

Performance Bank Guarantee:

Within ten (10) days of the award of contract, the vendor shall furnish a Performance Bank Guarantee amounting to 10% of the purchase order value in the form of Bank Guarantee favouring the Director, National Institute of Science Education & Research, Jatni valid till completion of warranty period.

f) If the bid is for branded makes, authorization letter from principals clearly indicating that the vendor is the competent authority to sell and provide services towards the items mentioned in the scope of supply given in this tender document.

g) Copy of GST No. and PAN No. allotted by the concerned authorities.

h) List of deliverables / Bill of materials and services.

i) Compliance sheet with any deviation with reference to the terms and specifications.

j) The item should be supplied with manuals and the manuals including technical drawings should be complete in all respects to operate the system without any problem.

"Commercial Bid" shall contain:

a) Price schedule complete in all respects with proper seal and signature of authorized person. **Tender with any condition including conditional rebate shall be rejected forthwith.**

b) Cost of all the items should be mentioned clearly and individually in the Commercial Offer only.

c) **The Bidders are requested to quote for Educational/Institutional Price for Machine/ Equipment and, since we are eligible for the same.**

d) **Printed conditions of the vendor submitted with the tender will not be binding on NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH.**

5. Tender process & award of contract.

The technical bids will be evaluated to shortlist the eligible bidders. The commercial bids of only the short listed bidders shall be considered for further processing. Bidders whose technical offer is found acceptable and meeting the eligibility requirements as specified in this tender will be informed about the date and time of the opening of the commercial bid.

- NISER will open commercial bids of only the short listed bidders, in the presence of the bidders or their authorized representatives who choose to attend the commercial bid opening. The Date and Time of opening the Commercial Bid will be intimated only to pre-qualified and technically acceptable Bidders for the item at a later date.
- ONLY TECHNICALLY accepted competitive bids will be considered for placing Purchase Order. The commercial offers of the vendors whose technical offers are found to be technically deficient or do not meet the qualification criteria as specified in this tender will be returned to them without opening.
- **Purchaser's Right to vary Quantities at the time of Award:** NISER reserves the right at the time of award of Contract to increase or decrease the quantity of items specified in the Schedule of Requirements without any change in price or other terms and conditions.

6. The Director NISER reserves the right to accept the offer in full or in parts or reject summarily or partly.

7. Delivery Period / Timeliness

The deliveries, installation must be completed within 180 days, after placement of purchase order. The time is the essence of the contract. It is mandatory for the bidders who respond to this bid to meet these expectations, as they are tightly linked to NISER's plans of completing the project within the time frame.

8. Locations for the Supply / Services

The Laboratory Equipments covered by this document is required to be supplied and installed at School of Physical Sciences of NISER, Jatni.

9.Order Placement and Release of Payment

The Purchase Order and payment shall be processed by –

Stores & Purchase Officer
National Institute of Science Education & Research,
Jatni Campus, P.O. – Bhimpur-Padanpur, Via-Jatni,
Khurda – 752050, Odisha, INDIA

Payment for the items to be supplied by the vendor against the purchase order shall be made by National Institute of Science Education & Research as follows:-

100% payment will be made through Letter of Credit. 80% will be paid after submission original shipping documents & balance 20% will be released after satisfactory installation, commissioning, warranty certificate and along with submission of Performance Bank Guarantee.

Agency Commission: Agency Commission to be paid to India Agent should be specified separately and same will be paid in INR.

The tenderers who are not agreeing to above payment terms are requested not to submit their tender otherwise their EMD will be forfeited.

10. NISER will not provide any accommodation/transportation for the engineers/ representatives for attending installation, commissioning and demonstration work. It is the absolute responsibility of the Principal Supplier/Indian Agent to make their own arrangements.

11. The successful bidder, on award of contract / order, must send the contract / order acceptance in writing, within 7 days of award of contract / order failing which the EMD will be forfeited.

12. Period of validity of bids

- Bids shall be valid for a period of 90 days from the date of opening the Technical bid.
- NISER may ask for the bidder's consent to extend the period of validity. Such request and the response shall be made in writing only. The bidder is free not to accept such request without forfeiting the EMD. A bidder agreeing to the request for extension will not be permitted to modify his bid.
- Bid evaluation will be based on the bid prices without taking into consideration the above corrections.

13. Corrupt or Fraudulent Practices

NISER requires that the bidders who wish to bid for this project have highest standards of ethics. NISER will reject a bid if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices while competing for this contract. NISER may declare a vendor ineligible, either indefinitely or for a stated duration, to be awarded a contract if it at any time determines that the vendor has engaged in corrupt and fraudulent practices during the execution of contract.

14. Interpretation of the clauses in the Tender Document / Contract Document

In case of any ambiguity / dispute in the interpretation of any of the clauses in this Tender Document, Director, NISER's interpretation of the clauses shall be final and binding on all parties.

15. Price

- The price quoted shall be considered firm and no price escalation will be permitted at any time. The quotation should be in Indian Rupees or any known foreign currency. Packing, forwarding, freight, insurance, **Agency commission** and commissioning charges, if any extra may be quoted separately in Commercial Bid.
- In case of INR bids the price criteria should be on F.O.R., NISER, Jatni. Govt. Levies like GST, etc., if any, shall be paid at actual rates applicable on the date of delivery. Rates should be quoted accordingly giving the basic price, GST, etc., if any.
- Please provide TIN no. of the firm along with the GST No. allotted by the concerned authorities in your quotation.
- In case of Foreign Currency bid: - Price criteria should be FOB nearest airport detail break up of Price, FCA cost, **Agency Commission**, Insurance, Freight up to Kolkata Airport is required.
- NISER may place order at CIF Kolkata Airport basis.

16. Pre-installation:

Pre-installation facilities required for installation may please be intimated in the technical bid. Subsequently, before the consignment lands in NISER, Jatni the bidder shall confirm that the pre-installation requirements are sufficient for installation of the equipments. In otherwords the bidder should continuously monitor the pre-installation requirements and see that everything is ready before the consignment is taken to the site for installation.

17. Installation, Warranty & Support

- Bidder shall be responsible for installation / demonstration wherever applicable and for after sales service during the warranty and thereafter.
- The items covered by the schedule of requirement shall carry minimum **Three years comprehensive warranty from the date of acceptance of the equipments by NISER**. Warranty shall include free maintenance of the whole equipment supplied including free replacement of parts. The defects, if any, shall be attended to on immediate basis but in no case any defect should prolong for more than 24 hours. The comprehensive warranty includes onsite warranty with parts.

- The defects, if any, during the guarantee/warranty period are to be rectified free of charge by arranging free replacement wherever necessary. This includes cost, insurance, freight, custom duty, GST, local taxes if any should be borne by the beneficiary or his agent. A clear confirmation should be given for this item.
- The bidder shall assure the supply of spare parts after warranty is over for maintenance of the equipment supplied if and when required for a period of 10 years from the date of supply of equipment on payment on approved price list basis.
- The equipment must be supported by a Service Centre manned by the principal vendor's technical support engineers. The support through this Centre must be available 24 hours in a day, three days a week and 365 days a year. Also it should be possible to contract the Principal's vendor support Centre on a toll free number/web/mail.
- The vendor will have to arrange for all the testing equipment& tools required for installation, testing & maintenance etc.

18. Indemnity

- The vendor shall indemnify, protect and save NISER against all claims, losses, costs, damages, expenses, action suits and other proceeding, resulting from infringement of any law pertaining to patent, trademarks, copyrights etc. or such other statutory infringements in respect of all the equipment's supplied by him.
- The successful will be fully responsible for payment of wages and other dues as prescribed and compliance of various Labour Laws.
- The successful tender should give an undertaking that the staff deployed at the centre in terms of this contract at all time will be employees of the agency exclusively and they shall not be entitled to any claim of employment or permanency of job with NISER.
- NISER reserves the right to forfeit whole or part of the security money towards any damage/lose caused due to the negligence on the part of the agency engaged.

19. Insurance

The equipment to be supplied will be insured by the vendor against all risks of loss or damage from the date of shipment till such time it is delivered at NISER site in case of Rupee/Foreign currency transaction.

20. Penalty for delayed Services / LD

As time is the essence of the contract, Delivery period mentioned in the Purchase Order should be strictly adhered to. Otherwise the EMD/SD will be forfeited and also LD clause will be applicable /enforced.

If the supplier fails to Supply, Install and Commission the equipment as perspecifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of 1% of order value per every week of delay subject to a maximum of 10% beyond the due date. Such money will be deducted from any amount due or which may become due to the supplier.

NISER reserves the right to cancel the order in case the delay is more than 30 days Penalties, if any, will be deducted from the EMD.

21. Jurisdiction

If a dispute arises out of or in connection with the contract, or in respect of any defined legal relationship associated therewith or derived there from, the parties agree to submit that dispute to arbitration under the ICADR Arbitration Rules, 1996.

The authority to appoint the arbitrator(S) shall be the International Centre for alternative dispute resolution.

The International Centre for Alternative Dispute Resolution will provide administrative services in accordance with the ICADR arbitration Rules, 1996.

Stores & Purchase Officer
NISER, Jatni

DECLARATION BY THE VENDOR

It is hereby declared that I/We the undersigned, have read and examined all the terms and conditions etc. of the tender document for which I/We have signed and submitted the tender under proper lawful Power of Attorney. It is also certified that all the terms and conditions of the tender document are fully acceptable to me/us and I/We will abide by the conditions from serial no. 1 to 21 and we have not given any printed conditions beyond the scope of this tender. This is also certified that I/We/our principal manufacturing firm have no objection in signing the purchase contract if the opportunity for the supply of the items against this tender is given to me/us.

Date: Signature:

Address: Name:

Designation:
On behalf of:

(Company Seal)

PART - 1-Technical Bid
SUPPLY AND INSTALLATION
OF
MATERIAL PREPARATION UNIT
FOR
National Institute of Science Education and Research, JATNI
Notice Inviting E-Tender No. NIT-40 (NC-000813-PHY-16-17)
www.tenderwizard.com/NISER

	Name of the Vendor		
Sl. No		**Please fill details**	**Page No. with name of the documents attached in support of information required**
1	**Name of the Company**		
2	**Full address of company along with Telephone no. Fax no. E-mail address :**		
3	**Local address of company for communication, if any**		
4	**Are you a manufacturer or dealer/reseller**		
5	**If dealer please attach certificate from your principal company clearly showing validity of your certificate**		
6	**If foreign supplier: please give details of your Indian authorized partner if any**		

7	**Annual turnover in last 3 financial years in Rs. Crores.** **(i) Year 2014-2015** **(ii) Year 2015-2016** **(iii) Year 2016-2017** **Please attach balance sheet**		
8	**Supply & Installation of MATERIAL PREPARATION UNIT with low temperature or equivalent to our tendered of last 3 financial years in State Government or Govt. of India Department(s) /Reputed Organisation(s) (in Nos. and Value)** **(Please attach list of clients)** **(i) Year 2014-2015** **(ii) Year 2015-2016** **(iii) Year 2016-2017** **Please attach copy of Purchase Order/ Completion Certificate**		
9	**GST Registration no. with Place**		
10	**Income Tax Registration no. with place**		
11	**Photocopy of EMD**		
12	**Name and address on whom purchase order will be placed**		
13	**Delivery Period : Please mention time of delivery and installation**		
14	**Terms of delivery : CIP /CIF for foreign currency orders**		
15	**Bank details of the supplier on which order will be placed**		
16	**If you are claiming exemption certificate under SSI/DGS&D/DAE, Please attach self attested copy of certificate which should be valid during the tender process**		
17	**Service center details & principal vendor support centre**		
18	**Declaration to be submitted by Vendor**		
19	**Warranty 3 years Accepted/Not Accepted**		

PART - 2-Technical Bid

SUPPLY AND INSTALLATION
OF
MATERIAL PREPARATION UNIT
FOR
National Institute of science education and research, JATNI

Notice Inviting E-Tender No. NIT-40/2017 (NC-000813-PHY-16-17)

Sl No	Item Specification	Accepted/Not Accepted/Deviation if any. Please specify your specification if deviation is there	Page No. of your specifications/Brochure/ Deviation, etc attached in support of your specification/deviation
1	**ION BEAM MILLING SYSTEM:** The ion-beam thinning equipment should be a capable of preparing transmission electron microscopy specimens (3 mm diameter) of both conducting and non-conducting samples, such as Silicon Carbide, Silicon, ceramics, multi-phase metals and composites etc. It should not induce artifacts in the specimen preparation. Also, it should result in large electron transparent regions for viewing in a TEM; both conventional and high resolution TEM modes. The construction and operation of the equipment should be user-friendly.		

a	**Ion-guns:** • Two ion guns each with independently adjustable gas control utilizing mass flow controllers to permit either rapid milling or slow precise ion polishing. • Ion beam energy shall be continuously adjustable from 100eV to 8keV. • The alignment of the ion beams should be user friendly with either a fluorescent screen or a suitable mechanism. Also a mechanism is to be provided to measure the ion beam currents/operating voltage. • Ion gun should produce narrow ion beam width at the sample (full width at half maximum of the beam diameter shall be around 600-800 um for standard guns at 5 kV with ion current density of ~ 10mA/ cm^{-2}) • The milling angle shall be continuously variable from +10 Deg to −10 Deg and fully adjustable during operation. • The ion guns shall have no consumable parts or very long life (> 30,000 hours of continuous operation. • The current range should be variable from 0 to 100 micro Amps. • The current should be measurable for each gun independently and measured at the gun. • Special Operational Mode for preparing cross sectional samples for TEM Analysis should be offered as standard. • Ion Gun Energies for both the ion guns on the ion milling system should be same.		

b	**Stage and Specimen Holders:** • A specimen exchange mechanism shall be incorporated in the system to permit loading or unloading of samples without venting the work chamber to atmosphere. Specimen stage should allow rapid transfer of specimens (~1-2 minutes). • The Specimen stage should have provision for the rotation of the specimens during milling. Rotational speed shall be continuously variable from 0 – 6 rpm or more. • Provision of a mechanism for Sector milling (i.e, milling the specimens from only one side or any side) over a range of 45 to 90 degrees should be available. The mechanism should permit the preparation of cross-sectional TEM specimens of multilayer's without significant milling of the glue-line (or bonding layer used to prepare cross-sections). • The Stage shall incorporate X, Y motion to assist the user in positioning the specified mill location at the center of the beam polishing area. The minimum stage travel shall be ~+/-0.5 mm (i.e. ~1 mm in total) in X and Y directions. Please note that it should be possible to load the sample in ion milling tool for X & Y Alignment while the sample is mounted on the specimen post. • The specimen holder should be able to hold 3 mm diameter TEM specimens by either clamping mechanism or sticking mechanism. For loading unloading of the sample in specimen holders, suitable user-friendly mechanism should be provided. Also they can be rapidly and easily transferred in to the ion beam thinning equipment. • Specimen heating: A glue-type specimen holder shall be supplied to optimize heat dissipation.		

	• The holder should have long life time and durability. They should be compatible for cooling the TEM specimens with liquid nitrogen during the ion milling • Cold stage shall offered as standard as per the following specifications: o Dewar and conductor rod should share the main vacuum system o 6-8 hour Dewar capacity o Sample temperature: -The specimen can be kept in user defined temperature in the range of -150 ˚C to 30 ˚C or better, during milling. A mechanism to measure the relevant temperature should be provided. The cooling/warm-up of the specimen's should be done rapidly (~30-45 minutes) and in-built mechanism for this operation should be provided. o Electronic temperature regulation: minimum range (-180°C to + 100°C) o Through transmission illumination of sample o Built in Dewar heater is essential.		
c	**Specimen Viewing:** • In-situ viewing: Any time without shutting down the ion guns or raising the sample into the airlock. • Shutter: An automatic shutter shall be incorporated to reduce window contamination when not viewing the specimen. • Sample illumination: Reflection and through transmission with the intensity set via the Touch Screen. • A Stereo Optical Microscope 40X, 80X magnification should be supplied along with the ion milling equipment as standard.		
d	**Milling Termination:** Milling termination by elapsed timer or optional light operated Auto-Terminator.		

e	**User Interface:** • About 8-10" or larger color touch-screen graphical user interface (GUI) should be supplied as standard. The GUI must be located on the front panel of the system for easy access and viewing. All system functions (gun settings, gas flow controls, stage movements, etc.) shall be controlled through this screen. • Remote access to the system must be available through a network connection. The communication protocols will be used for monitoring the system's status, starting, pausing, and/or stopping the milling process.		
f	**Vacuum System and vacuum reading:** • The vacuum system shall be totally self-contained within the enclosure. • A totally oil-free vacuum system, pumping with turbo pump and oil free backing pump • Work chamber base pressure:~1E –6 Torr • Operating pressure: ~ 1E –5 Torr. • Suitable gauges to monitor the vacuum levels in main chamber and baking pump. • Vacuum gauge should be present in the chamber area to read the vacuum in the specimen preparation area • Sample exchange through air lock		
g	**Power:** 230 V, 50 Hz, single phase		
h	**Cooling:** The system shall be air cooled only, no water cooling should be required.		
i	**Documentation:** The detailed user instruction manual, operation/instruction manual, trouble shooting and maintenance manual and writing diagrams in English should be supplied free of cost along the system		
j	**Installation/Commissioning:** The equipment should be installed in the laboratory without additional cost. Also, two scientists should be trained in the laboratory.		
k	**Warranty:** 3 year warranty from the date of acceptance of the equipment.		

l	**Spare/ consumable:** Following consumables should be supplied with the equipment as a part of standard package –		
	i) Glue Type Sample Holder – Qty 1 ii) Clamp Type Sample Holder – Qty 3 iii) Specimen Post Copper – Qty 2 iv) Moly disulfide lubricant, 1gm – Qty 1 v) Quad-seal #111, Cold stage set of 2 – Qty 1 vi) Cold Stage Window (pkg. of 10) – Qty 1		
2	**DISC GRINDER WITH LAPPING KIT**		
a	**Disc grinder:** • Disc grinder manual operation for 3 mm dia specimens • Disc mount with goniometer with at least 10micron graduation on the scale		
b	**Specimen lapping kit:** A heavy metal base, 3 ultra flat glass lapping plates and approximately 100 lapping discs for each grit size		
c	**Consumable/ Spares:**		
	i) Specimen Mount (Pyrex) Set of 4 – Qty 2 ii) Specimen Mount (SS) Set of 4 – Qty 2 iii) Mounting Wax, (12 rods, 3.5mm X 32mm) – Qty 2 sets iv) Lapping Discs 20 each of 5um, 15um & 40 µm – Qty 5 sets v) Specimen Mounting Hot Plate - Qty 1		
d	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
e	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
f	**Manuals:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
3	**Disc Punch:**		
a	**Punch Size:** For 3 mm dia circular samples		
b	Preferable user independent, horizontal/vertical cutting action		

c	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
d	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
e	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
4	**DIMPLE GRINDER WITH STEREOMICROSCOPE:**		
a	**Sample Size:** Suitable for 3 mm dia. Sample		
b	**Dimpling process specs:** Dimpling depth down to 10 microns or less Automatic termination of the process. Digital Micrometer & Analog Micrometer to indicate depth in Dimple Grinder is essential.		
c	**Sample monitoring during grinding:** Stereomicroscope for alignment of the sample essential		
d	**Consumables/spare parts:**		
	i) Phosphor bronze (PB), spherical, 2mm wide set of 4 - Qty 1 set ii) Stainless steel (SS), spherical, 2mm wide set of 4 – Qty 1 set iii) Polishing Wheel 15mm Ø (Standard) set of 4 - Qty 1 set iv) Felt Polishing Rings (15mm Ø for 656.07512) set of 15 – Qty 2 set v) Diamond Polishing Compound (2-4um), 5gm – Qty 2 vi) CBN 0-2um Polishing Compound, 5g Syringe – Qty 2 vii) CBN 4-6um Polishing Compound, 5g Syringe – Qty 2 viii) Alumina Suspension 0.05um, 2 oz. – Qty 2		
e	**Power supply requirements:** 230V, 50 Hz Operation, single phase		
f	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		

g	**Warranty:** 12 months warranty from the date of acceptance of the equipment. Please quote 2nd & 3rd year warranty charges as optional items.		
h	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
5	**LOW SPEED DIAMOND WHEEL SAW:**		
a	**Power Supply:** 230V, 50 Hz, Single Phase		
b	**Flanges:** System should have ~65 mm dia OD and 42 mm ID flanges		
c	**Materials:** Saw should be suitable for sectioning HARD AND BRITTLE MATERIALS like Sapphire, SiC etc		
d	**Variable Cutting Speed:** 200 to 300 RPM or more		
e	**Cutting Pressure:** 0 to 300 gms or more		
f	**Wheel Diameter:** System should accommodate cutting wheels @ 12.5mm Dia		
h	**Precision Cut:** Should be equipped with a micrometer screw gauge based positioning system to accurately determine the thickness of the section.		
i	**Diamond Wheel:** System should be supplied with 1 Diamond Wheel . The vendor should also include another diamond wheel under optional items.		
j	**Cutting Fluid/Coolant:** A pack of Coolant/Cutting Fluid should be supplied along with the equipment. One additional pack should be supplied as optional item		
k	**Power supply requirements:** 230V, 50 Hz Operation, single phase		
l	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
m	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
n	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		

6	**JET POLISHER FOR TEM SAMPLE PREPARATION OF METALLIC SAMPLES:** The automatic electrolyte jet thinning equipment should be able to prepare a perforated specimen of 3mm diameter for TEM from a sample thickness of about 0.5mm to a thickness of less than 50nm. The thinning unit should consist of a control unit, polishing unit.		
a	**Control Unit for Jet Polisher:** A separate control unit should be provided incorporating power supply, programming and monitoring functions. It should have the following features: • Should have automatic control. • Should have an electronic thermometer to measure temperature of the electrolyte. • Should have an adapter to connect to the polishing unit. • Mains voltage should be single phase, 220-240 V, 50Hz. • Output voltage should be in the range 0-120V DC. • Digital display of required parameters like current, electrolyte temperature and elapsed thinning time. • A built-in scan function to determine the correct polishing voltage for any material will be given preference: • A database or manual to accommodate up to 200 user methods of electrolytic thinning for different materials. • Automatic or manual stopping of the polishing process if the temperature of the electrolyte exceeds the predetermined temperature		

b	**Polishing unit:** for Twin Jet Polisher The polishing unit should be compatible to the control unit and the specimen should be polished from both sides simultaneously, so that the structure is available with minimum deformation. The polishing unit should have the following features: • Should have a specimen holder for 3mm diameter and 0.5 mm thick specimens where one part of the holder should carry a platinum conductor so that electrical connection to the polishing circuit is automatically established. • Should have set of jets of 1mm diameter for thinning 3mm diameter specimens. • Infrared detector to stop the thinning process automatically once the perforation appears. • All the parts, which would be in contact with chemicals, should be made of corrosion-resistant material		
c	**Sample Holders:** Twin Jet Polisher should be supplied with 1, 3mm sample Holder. Please include another 3mm sample holder as optional item.		
d	**Power supply requirements:** 230V, 50 Hz Operation, single phase		
e	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
f	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
g	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
7	**Precision Vertical Diamond Wire Saw For Cutting Metals, Semiconductor, Ceramic, Glass, Plastic & Composites Materials:**		

a	**Diamond Wire Saw:** • Smooth, sharp-edged cut surfaces • Vertical arrangement of the wire x Linear feed (60 mm or more) • Variable wire speed • Automatic shut-down of the saw upon termination of cutting or in the event of wire breakage x Equipment for operation with cutting fluids • Easy servicing and largely maintenance free • The specimen holder should be situated inside the wire loop such that it can serve as a reference while the specimen can be turned • 240V, 50 Hz Operation		
b	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
c	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
d	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
8	**ULTRASONIC DISC CUTTER with Cross Sectional Kit:**		
a	**Sample Size:** • Circular cutting tool 3 mm, 2.3 mm diameter • Rectangular cutting tools min. 2mm X 3mm and/or bigger		
b	**Sample monitoring during cutting:** Stereomicroscope is a must		
c	**Cutting process specs:** • Variable user tunable frequency • Depth of cut display indicator • Spring loaded sample stage with capability of positioning the cut in the desired position accurately		
d	**Consumables:** All required Consumables for 5 years should quoted		
e	**Power supply requirements:** 230V, 50 Hz Operation, Single phase		
f	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		

g	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
h	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
9	**Cross Sectional Kit for Cross Sectional TEM Sample Preparation:**		
a	**Cross -sectional TEM Kit:** List out all the parts included in the kit		
b	**Specimen Mounting Hot plate:** • Hot plate With thermostatic control of temperature • suitable sample mount holders		
c	**Consumables/Spares:** Offer additional spares for at least 3 years operation.		
d	**Installation and start-up assistance:** Installation, start up assistance and training should be included.		
e	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
10	**Hot Plate for Specimen Mounting:** With thermostatic control of temperature and suitable sample mount holders		
11	**Single Disc Motorised Grinding/Polishing Machine With Complete Accessories:** • Touch pad controls with LCD Display • Motor Power minimum 190W /0.5HP • Platen Diameter – 8”/200mm • Variable speed from 10-300 RPM or wider range • 240V, 50 Hz Operation		
12	**ADVANCED PLASMA CLEANER (Optional):**		
a	**Plasma Source:** • The system shall have a low energy glow discharge ion source creating hydrogen and oxygen radicals • The system shall have approximately 75 Watt RF Source @13.56 MHz • The system shall have auto-tuning to couple the source to the chamber and generator		
b	**Sample Holders:** • Two ports shall be available to accept all side entry TEM holders • A 3rd large port shall be available for cleaning of irregular samples, SEM holders and other parts that may affect		

	the performance in an electron column instrument.		
c	**Vacuum System:** • A totally oil-free vacuum system, pumping with turbo pump and oil free backing pump • Work chamber base pressure: ~1E – 6 Torr • Suitable gauges to monitor the vacuum levels in main chamber and baking pump.		
d	**Main Chamber:** • Multiple entry and viewing ports • The chamber shall have two airlock ports to support all side entry TEM goniometers • A large entry port shall also be available for SEM holders, samples and other irregular shaped pieces.		
e	**Gas Control System:** • The system shall support a minimum of three gases these should include Argon, Hydrogen and Oxygen • The gas flow should be controlled using MFCs • Should be capable of cleaning with minimal plasma damage. • Should be capable to clean holey carbon grids without damaging them. Data supporting this should be included along with the offer.		
f	**User Interface:** • The User Interface shall be a seven inch or larger touch screen. • The system shall have two USB ports. • Standard Recipes shall be available using mixtures of the three gases. • The touch screen shall be configured to display multiple languages		
g	**Power Supply:** 230V, 50Hz, Single Phase		
h	**Installation & commissioning:** a) The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		

i	**Warranty:** 3 years warranty from the date of acceptance of the equipment.		
j	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
k	**Items to be included as standard:** • 2 TEM Holder Adaptors • Special Sample Holder for cleaning Carbon Coated grids.		
13	**Gold-Carbon Sputter Coating System (Optional):** The sputter coating unit must be a state-of-the-art, easy to use, versatile, compact (must be table-top size) turbo molecular pump based (backed by rotary pump) coating system. Please note all the below-mentioned technical specifications must be supported by original technical brochure / datasheet / documents as well as available in the manufacturer's official website. The sputter coating unit should be supplied with combined metal sputtering unit (must be capable of using various nobel metal targets) as well as carbon materials (should use both carbon rod & fibre) evaporation inserts – these should be on-site swappable easily and capability automatically detects the type of coating insert fitted. The sputtering coating unit should have glow discharge option (for future upgradation) to allow modification of specimen surface properties.		
a	The unit must be capable of combining the coating unit with nobel metals sputtering as well as carbon coating – all in one unit and makes it space saving as well as cost-cutting design which is required in the laboratories and these must be field swappable easily. Please quote glow discharge unit separately in the option.		
b	**Control:** The system must be turbo pump based backed by rotary pump. The system should have pre-programmed automatic vacuum control suitable for process and material.		

c	**Targets:** Should allow sputtering of a range of non-oxidizing /noble metals such as gold (Au), platinum (Pt) and palladium (Pd). • Should allow Carbon coating using Carbon rods & fibre using advanced designed carbon evaporation gun. • Should have capability of multiple, customer-defined coating schedules can be stored. • Should have capability for glow discharge option for modification of specimen surface properties for future upgradation. • Should have fully automatic touch screen control in the system including rapid data input, simple operation etc. • The system should have rotating stage design with 50mm dia for accommodating large samples • The data should be rapidly entered during parameter settings using fully automatic touch screen control display. The data can be pre-set and can be stored at the touch of a button on the display.		
d	**Vacuum:** • Using oil-free turbo molecular pump backed by rotary pump. Internally--mounted, 70L/s air- cooled turbo molecular pump and 50L/m two-stage rotary pump with oil mist filter. • The vacuum measurement must be by Pirani gauge. • The typical ultimate vacuum should be 5x10-5 mbar with sputter vacuum range between 5x10-3 and 5x10--1mbar		
e	**Specimen Stage:** Should have 50 mm diameter rotation stage. Must have adjustable tilting facility up to 90° angle.		
f	**Sputtering Process:** With 0 – 150mA to a pre-determined thickness using either film thickness monitor or by the build-in-time The maximum sputtering time is 60 minutes without breaking vacuum. The sputtering process should be monitored with a quartz crystal for accurate measurements.		

g	**Carbon Evaporation Process:** Current pulse: 1-90A or better Should ensure the reproducible carbon evaporation from rod or fiber sources using a robust; ripple free DC power supply used for pulse evaporation. **Metal targets needed:** Gold (Au): 57mm diameter & 0.1 mm thick – 1 no **Carbon materials needed:** Carbon fibre cord - 1m **please quote as optional:** Carbon rods 3mm diameter & 100mm ling, unshaped – 10 nos with suitable carbon rod shaper.		
h	**Installation & commissioning:** The equipment should be installed in the laboratory without additional cost. Start-up assistance and training should be included for two scientists in the laboratory.		
i	**Warranty: 3** years warranty from the date of acceptance of the equipment.		
j	**Documentation:** Operating and maintenance manual, wiring diagrams, spare part list as applicable		
k	**Items to be included as standard:** • 2 TEM Holder Adaptors • Special Sample Holder for cleaning Carbon Coated grids.		
Essential Criteria:-			
1	Vendor should be capable of preparing samples on site using these equipment & training the users on preparing these samples.		
2	The vendor should be capable to test one of the sample prepared by the customer if the technical committee decided to ask for that.		
3	One company should be responsible to supply all the equipment as a package.		
4	The company should have the experience of setting up at least 10 such TEM Sample Prep labs in India. User names & references should be provided along with the bid.		
5	The vender should quote the mentioned optional items separately including 3 year warranty.		
6	All the items should be CE certified.		