



Institute of Nano Science and Technology
 Habitat Centre, Sector 64, Phase X, Mohali -160062, Punjab, India
 Ph: +91-172-2210073/75; Fax: +91-172-2211074; E-mail ID: purchase@inst.ac.in

NOTICE INVITING TENDER

INST invites tender from the reputed manufacturers or their authorized dealers so as to reach this office on or before scheduled date and time for the instrument, as per specifications given in the Annexure attached to the Tender form. All offers should be made in English and should be written in both figures and words. Tender forms can be downloaded from the website (www.inst.ac.in) of the Institute.

The bidders are requested to read the tender document carefully and ensure compliance with all specifications/instructions herein. Non-compliance with specifications/instructions in this document may disqualify the bidders from the tender exercise. The Director, INST reserves the right to select the item (in single or multiple units) or to reject any quotation wholly or partly without assigning any reason. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected.

INSTRUMENTS LIST

S. No.	Ref. No.	Instrument	Qty	Tender Submission Date and Time	Tender Opening Date and Time	Tender Fee (Non-refundable)	EMD
1	INST/equip/2016-17/M-01	UV-VIS NIR Monochromator/Spectrometer with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 30,000/-
2	INST/equip/2016-17/M-02	Dual Phase DSP based Lock-in Amplifier with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 9,000/-
3	INST/equip/2016-17/M-03	Xenon White Light source system with power supply with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 5, 000/-
4	INST/equip/2016-17/M-04	Metric Optical Table with active isolator legs and optical bread boards with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 9,000/-
5	INST/equip/2016-17/M-05	Optical Chopper System with chopper blade with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 2,000/-
6	INST/equip/2016-17/M-06	25mm XYZ Translation Stage with metric micrometre taps with Accessories	02 Nos.	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 5,000/-
7	INST/equip/2016-17/M-07	CCD Camera with Accessories	01 No	30/03/2017 upto 2.00PM	30/03/2017 at 3.00PM	Rs. 500/-	Rs 3,000/-

Note: The Institute shall not be responsible for any postal delay about non-receipt / non delivery of the bids or due to wrong addressee.

TERMS AND CONDITIONS

Important Conditions of the tender to be abide by the tenderer

- Due date:** The tender has to be submitted before the due date. The offers received after the due date and time will not be considered.
- Preparation of Bids:** The offer/bid should be submitted in single bid system (i.e.) Technical bid cum financial bid. **The Quotations should be valid for 120 days from the due date.** The



Quotations duly sealed and super scribed on the envelope with the reference No. and due date, should be addressed to “**The Director, Institute of Nano Science and Technology, Habitat Centre, Sector 64, Phase –X, Mohali, 160062, Punjab**” so as to reach on or before the due date.

3. **Delivery of the tender:** The tender shall be sent to the addressee given in para 2 (above) either by post or by courier so as to reach our office before the due date specified in our Schedule. The offer/bid can also be dropped in the tender box on or before the due date specified in the schedule. The tender box is kept in Foyer area of INST.
4. **Opening of the tender:** The offer/bid will be opened by a committee duly constituted for this purpose. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening. Only one representative will be allowed to participate in the tender opening.
5. **Acceptance/Rejection of bids:** The INST reserves the right to reject any or all offers without assigning any reason.
6. **EMD:** Tender fee/EMD is to be obtained from the bidders except those who are registered with the Central Purchase Organisation, National Small Industries Corporation (NSIC) or the concerned Ministry or Department. The tenderer should submit Tender Fee/EMD amount as per tender ref. no. through NEFT/RTGS in INST Account. Account Details are as follows:
 - a. Name of Beneficiary: Institute of Nano Science and Technology (INST)
 - b. Account No. **2452201001102**
 - c. Name of Bank: **Canara Bank, Sector 34, Chandigarh**
 - d. IFS Code: **CNRB0002452**
 - e. MICR Code: **160015003**
 - f. Swift Code: **CNRBINBBFFC**

The details of transaction for EMD viz. Name of bidder firm, Tender Description, Transaction ID/No. of Transfer, Transaction date, Amount of Transaction, Name of Bank, Address of Bank shall be furnished by the tenderer on their letterhead separately along with their tender.

7. **Refund of EMD:** Bid securities of the unsuccessful bidders shall be returned to them at the earliest after expiry of the final bid validity and latest on or before the 30th day after the award of the contract. In case of successful Tenderer, it will be retained till the successful and complete installation of the equipment.
8. **Performance Security:** The supplier shall be required to submit the performance security in the form of irrevocable bank guarantee issued by any Indian Nationalized Bank for an amount which is equal to the 10% of Purchase value at the time of the installation of the equipment covering warranty period of the equipment and should be kept valid for a period of 60 days beyond the date of completion of warranty period.



9. **REASONABILITY OF PRICES :**

Please quote best minimum prices applicable for a premier Research Institution, **leaving no scope for any further negotiations on prices.** The quoting party should give a certificate to the effect that the quoted prices are the minimum and they have not quoted the same item on lesser rates than those being offered to INST to any other customer nor they will do so till the validity of offer or execution of the purchase order, whichever is later. We request you to fill the price reasonability certificate format in the enclosed file (Annexure "1")

The party must give details of identical or similar equipment, if any, supplied to any CSIR labs/DBT Institutes during last three years along with the final price paid and Performance certificate from them.

10. **Force Majeure:** The Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, it's delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

- For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

11. **Risk Purchase Clause:** In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.

12. **Packing Instructions:** Each package will be marked on three sides with proper paint/indelible ink, the following:

- i. Item Nomenclature
- ii. Order/Contract No.
- iii. Country of Origin of Goods
- iv. Supplier's Name and Address
- v. Consignee details
- vi. Packing list reference number

13. **Delivery of Goods:**

Delivery should be given at **Institute of Nano Science and Technology, Habitat Centre, Sector - 64, Phase 10, Mohali** within a maximum of one month's time from the date of placement of purchase order.



14. **Delayed delivery:** If the delivery is not made within the due date for any reason, INST will have the right to impose penalty @ 0.5% per week and the maximum deduction is 10% of the contract value / price.
15. **Prices:** The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated. The price should be quoted without custom duty and excise duty, since INST is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. **(Please refer Annexure – 2 for the price to be quoted).**
16. **Notices:** For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.
- i. **Purchaser:** The Director,
Institute of Nano Science and Technology,
Habitat Centre, Sector – 64, Phase X, Mohali – 160064.
- ii. **Supplier:** (To be filled in by the supplier)
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.....
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17. **Resolution of Disputes:** The dispute resolution mechanism to be applied pursuant shall be as follows:
- i. In case of Dispute or difference arising between the Purchaser and the supplier relating to any matter arising out of or connected with this contract, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, Institute of Nano Science and Technology (INST) Mohali and if he is unable or unwilling to act, to some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.
18. **Applicable Law:** The place of jurisdiction would be Mohali (Punjab) INDIA.
19. **Right to Use Defective Goods**
If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to



continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

20. **Training**

The Supplier is required to train the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.

21. **Installation & Demonstration**

The supplier is required to do the installation and demonstration of the equipment within one month of the arrival of materials at the INST site of installation, otherwise the penalty clause will be the same as per the supply of materials.

22. **Warranty:** Three Years Warranty shall have to be provided by the firm. The Warranty should be comprehensive on site.

23. **Taxes and Duties**

Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser. However, VAT in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.

24. **Payment:** 100% payment shall be made by the Purchaser after delivery, inspection, successful installation, commissioning and acceptance of the equipment at INST in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 8 of tender terms and conditions.

25. **User list:** Brochure detailing technical specifications and performance, list of industrial and educational establishments where the items enquired have been supplied must be provided.

26. **Manuals and Drawings**

- Before the goods and equipments are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals. These shall be in such details as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.
- The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract.
- Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawing have been supplied to the Purchaser.

27. **Site Preparation:** The supplier shall inform to the Institute about the site preparation, if any, needed for the installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural



requirements needed for the equipment, which the Institute should arrange before the arrival of the equipment to ensure its timely installation and smooth operation thereafter.

The supplier shall visit the Institute and see the site where the equipment is to be installed and may offer his advice and render assistance to the Institute in the preparation of the site and other pre-installation requirements.

28. **Acknowledgement:** It is hereby acknowledged that we have gone through all the conditions mentioned above and we agree to abide by them.

SIGNATURE OF TENDERER

ALONG WITH SEAL OF THE COMPANY WITH DATE



BID PARTICULARS

1. Name of the Supplier :
2. Address of the Supplier :
3. Availability of demonstration of equipment : Yes / No
4. Tender cost enclosed: : Yes/No if yes
5. Online EMD submission information enclosed : Yes / No if Yes

Transaction ID/No. of Transfer _____

Transaction date: _____

Amount of Transaction _____

Name of Bank _____

Address of Bank _____

6. Name and address of the Officer/contact person to whom all references shall be made regarding this tender enquiry

Name:

Address:

Ph:

Fax:

Mobile:

Email:

Web:



Compliance statement for the tender specifications

Tender Ref No.: INST/equip/2016-17/M-

S.No.	Check list of documents/Undertakings	Yes/No	Remarks (give explanation if the answer is No)
1.	Is EMD details attached? (if applicable)		
2.	Is the bidder original equipment manufacturer (OEM)/authorised dealer?		
3.	If authorised dealer, recent dated certificate to this effect from OEM, attached or not?		
4.	Undertaking from OEM regarding technical support & extended warranty period		
5.	Validity of 180 days or not?		
6.	Price Reasonability Certificate enclosed as per format??		
7.	Undertaking from bidder regarding acceptance of tender terms & conditions		
8.	Whether list of reputed users (along with telephone numbers of contact persons) for the past three years specific to the instrument attached?		
9.	Does the instrument comply with all the specifications detailed? Attach a separate sheet showing compliance with the specifications and explanations thereto if the equipment varies from the requested specifications.		
10.	Whether free Installation, Commissioning and Application Training offered?		
11.	Whether comprehensive onsite warranty offered?		
12.	Whether Annual maintenance after expiry of comprehensive onsite warranty quoted separately?		
13.	Whether free of cost shifting of instrument from transit campus to main campus offered?		



Annexure – 1

PRICE REASONABILITY CERTIFICATE

This is to certify that we have offered the maximum possible discount to you in our Quotation No. _____ dated _____ for (Value Rs.) _____.

We would like to certify that the quoted price are the minimum and we have not quoted the same item on lesser rates than those being offered to INST to any other customer nor we will do so till the validity of offer or execution of purchase order, whichever is later.

Seal and Signature of the tenderer



Annexure - 2

Name of Equipment with Model No: _____

Name & Address of Manufacturer: _____

Price Quoted

A. For Indigenous Equipment

- I. Cost of equipment (Rs.) _____
- II. Taxes (CST/VAT) (Rs.) _____
- III. Any other charges (Rs.) _____
- IV. Total cost of equipment (in Rs.) F.O.R, INST, Mohali _____

B. For Imported Equipment

- I. Cost of equipment (In Foreign Currency) _____
- II. Packing and Forwarding _____
- III. FOB/FCA Price _____
- IV. Freight charges upto Delhi Airport _____
- V. Insurance (110% of the cost of the equipment) _____
- VI. CIF/CIP upto Delhi Airport _____

Signature of Tenderer with date and seal



TECHNICAL SPECIFICATIONS OF UV-VIS-NIR MONOCHROMATOR/ SPECTROMETER:

UV-VIS-NIR Monochromator/ Spectrometer with Single Channel detector with provision to upgrade to dual output port Spectrometer having a CCD detector at straight through port.

Consisting of:

(a) Dual Monochromator / Spectrograph:

- (i) Focal Length : 300 mm
- (ii) Aperture Ratio = f/4
- (iii) Slits : One Micrometre Controlled Side Entrance Slit (10 μ to 3mm or better), One Micrometre Controlled Side Exit Slit and one straight exit port for mounting CCD detector with provision of *Z-focus adjustment* for sharp focus on the CCD detector.
- (iv) Motorized port selection mirror at exit to select ports via software
- (v) One interchangeable Triple Grating Turret or better
- (vi) Minimum Resolution with 10 μ m slit and PMT detector (@435.833 nm and with 1200g/mm):
0.1nm or better
- (vii) Mechanical scanning range: 0- 1400nm with 1200g/mm grating or better
- (viii) Linear Dispersion (@435.833 nm and with 1200g/mm): 2.38nm/mm or better
- (ix) Focal Plane width at the front exit port : 27mm wide x 14mm high or larger
- (x) Wavelength Accuracy : \pm 0.2nm or better
- (xi) Wavelength Repeatability : \pm 0.05nm
- (xii) Drive Step Size : 0.005nm or smaller
- (xiii) Astigmatism (at focal plane edges): 720 μ m or less
- (xiv) Computer Interface: USB and RS-232

(b) Three Gratings:

- One Ruled 1200g/mm and 68x68mm Grating blazed at 500nm, One Ruled 600grooves/mm and 68x68mm Grating blazed at 750nm and One Ruled 600grooves/mm and 68x68mm Grating blazed at 1 μ m **or better**.

(c) Single Point Detector

- An integrated Photon Counting detector system for wavelength range 185-850 nm or better.
- Should include PMT, Amplifier/discriminator and built-in high voltage power Supply.
- Should be easily mounted / removed on spectrograph/ monochromator slit assembly.
- Detector Readout Electronics, A/D Converter, etc for operation should be included.

(d) Software

- A **data acquisition software** that can control Detector Readout Electronics, Lock-in Amplifier, Chopper and detectors should be included.



**TECHNICAL SPECIFICATIONS FOR DUAL PHASE DSP BASED LOCK-IN
AMPLIFIER**

Signal Channel	
Voltage inputs	Single-ended or differential
Sensitivity	2 nV to 1 V or better
Current input	10 ⁶ or 10 ⁸ V/A
Input impedance	
Voltage input	10 MΩ + 25 pF, AC or DC coupled
Current input	1 kΩ to virtual ground
Gain accuracy	±1 % (±0.2 % typ.) or better
Noise	6 nV/√Hz at 1 kHz (or lesser noise) 0.13 pA/√Hz at 1 kHz (10 ⁶ V/A) (or lesser noise) 0.013 pA/√Hz at 100 Hz (10 ⁸ V/A) (or lesser noise)
Line filters	50/60 Hz and 100/120 Hz (Q=4)
CMRR	100 dB at 10 kHz, decreasing by 6 dB/oct above 10 kHz
Dynamic reserve	>100 dB (without prefilters) or better
Stability	<5 ppm/°C or better
Reference Channel	
Frequency range	0.001Hz to 102.4 kHz or larger
Reference input	TTL or sine
Input impedance	1 MΩ, 25 pF or less
Phase resolution	0.01° front panel or smaller
Absolute phase error	<1° or better
Relative phase error	<0.001° or better
Orthogonality	90° ± 0.001° or better
Phase noise	
Int. reference	Synthesized, <0.0001° rms at 1 kHz
Ext. reference	0.005° rms at 1 kHz, 100 ms, 12 dB/oct or better
Phase drift	<0.01°/°C below 10 kHz, <0.1°/°C, 10 kHz to 100 kHz
Harmonic detection	2F, 3F, ... nF to 102 kHz (n < 19,999) or better
Acquisition time	40 ms or better
Demodulator	
Stability	Digital outputs and display: no drift. Analog outputs: <5 ppm/°C for all dynamic reserve settings
Harmonic rejection	-90 dB
Time constants	10 μs to 30 ks (6, 12, 18, 24 dB/oct roll off). Synchronous filters available below 200 Hz. Or better
Internal Oscillator	
Range	1 mHz to 102 kHz or larger
Accuracy	25 ppm + 30 μHz or better
Frequency resolution	0.1 mHz or better
Distortion	-80 dBc (f <10 kHz), -70 dBc (f >10 kHz) @ 1 Vrms amplitude

	(or better specs)
Amplitude	0.004 to 5 Vrms into 10 k Ω (2 mV resolution), 50 Ω output impedance, 50 mA maximum current into 50 Ω or better
Amplitude accuracy	1 % or better
Amplitude stability	50 ppm/ $^{\circ}$ C or better
Outputs	Sine, TTL (When using an external reference, both outputs are phase locked to the external reference.)
Displays	
Channel	LED display for X, R, X-noise, Aux 1 or Aux 2. The display should also be possible for any of these quantities divided by Aux 1 or Aux 2.
Channel 2	LED display for Y, Θ , Y-noise, Aux 3 or Aux 4. The display should also be possible for any of these quantities divided by Aux 3 or Aux 4.
Offset	X, Y, R can be offset up to ± 105 % of full scale or better.
Expand	X, Y, R should be expandable by 10 \times or 100 \times .
Reference	LED display
Inputs and Outputs	
CH1 output	± 10 V output of X, R, X-noise, Aux 1 or Aux 2. Updated at 512 Hz. or better
CH2 output	± 10 V output of Y, Θ , Y-noise, Aux 3 or Aux 4. Updated at 512 Hz. or better
X, Y outputs (rear panel)	In-phase and quadrature components (± 10 V), updated at 256 kHz or better
Aux. A/D inputs / outputs	4 BNC inputs / outputs, ± 10 V, 1 mV resolution, sampled at 512 Hz or better
Sine Out	Internal oscillator analog output
TTL Out	Internal oscillator TTL output
Data buffer	Two 16k point buffers. Or better Data is recorded at rates to 512 Hz and read through the computer interfaces.
Trigger In (TTL)	Trigger synchronizes data recording
General	
Interfaces	IEEE-488.2 and RS-232 interfaces standard. All instrument functions can be controlled and read through IEEE-488.2 or RS-232 interfaces.
Power	40 W, 100/120/220/240 VAC, 50/60 Hz compatible with indian power supply system
Warranty	One year parts and labor on defects in materials and workmanship



TECHNICAL SPECIFICATIONS FOR XENON WHITE LIGHT SOURCE SYSTEM
WITH POWER SUPPLY

1. Xenon lamp source collimated system with Power Supply (Qty. 1)

Power: 150 W

Optical Stability: 0.5% or better

Voltage: 220V AC+/-10%

Power consumption : < 250W or better

Adjustable current: 8 to 9 A or better

Current ripple: $\leq 0.05\%$ (@8.5 A) or better

Light output ripple: 0.05% (8.5 A) or better

2. Power supply fuse (Qty. 2)

3. Xenon bulbs (Qty. 2)

Additional Technical Notes:

1. Collimated system along with power supply, extra fuse and bulbs should be included in the offer. The system quoted should have all the necessary details and datasheet for the same.
2. The vendors should submit their latest authorization letter from the manufacturer failing which will lead to rejection of the offer.
3. The details of the manufacturer should be mentioned and the quoted set should be mentioned in the website. Also the manufacturer should have ISO9001 or similar certifications.
4. Warranty of 1 year or more should be included.

TECHNICAL SPECIFICATIONS FOR METRIC OPTICAL TABLE WITH ISOLATOR

LEGS AND OPTICAL BREAD BOARD

S. No	Item	Specifications
I.	Metric Optical Table (Qty 1) with Isolator Legs	
1	Table top size (L × B) in mm	≥ 1800×1200
2	Total height (mm) from the floor	≥ 900 mm
3	Table top thickness (mm)	≥ 200
4	Working surface specifications	<p>Top Skin should have 4.0 to 5.0mm mm thickness ferromagnetic SS plate, smooth sanded finish</p> <p>Side Walls should have 2.0mm thickness carbon steel plate with damped wood composite, vinyl covered finish</p> <p>Bottom Skin should be 4 to 5 mm thickness carbon steel plate epoxy painted finish</p> <p>Core: Plated steel Honeycomb (0.25mm foil, 3.2cm² cell size)</p>
5	Surface Flatness	+/- 0.1mm over 600 mm square
6	Mounting Holes	Metric – M6-1.0 holes on 25mm grid, 37.5mm borders
7	Hole/Core Sealing	Easy clean cylindrical cup (25mm deep)
8	Damping	Broadband Standard Damping
9	1st Resonant Frequency	Less than equal to 221 Hz
10	Dynamic Deflection Coefficient	Less than equal to 6.71*10 exp-4
11	Maximum Relative Motion	Less than equal to 0. 15 nm
12	Pneumatic system	Must have 4 or 6 legs (With tie bars and castors / support system for easy movement of the table should be included)
14	Levelling	Auto Levelling by 3 Automatic Levelling valve
15	Levelling Repeatability	< ± 0.5~1.0 mm
16	1st Resonant Frequency	<ul style="list-style-type: none"> - Vertical : ≤ 1.5 Hz - Horizontal : ≤ 1.5 Hz
17	Isolation efficiency at 5 Hz	<ul style="list-style-type: none"> - vertical : over 85 % - Horizontal : over 75 %
18	Isolation efficiency at 10 Hz	<ul style="list-style-type: none"> - vertical : over 95 % - Horizontal : over 85 %
19	Damping Ratio	Over 0.11 (11 %)
20	Settling time	≤ 2 sec
21	Operating pressure	40-80 psi or better
22	Pressure control	Present minimum pressure by automatic switch
23	Air delivery	24 L/min. @80psi or better
24	Transparent enclosure for above the large table top (optional*)	
II.	Light weight metallic honeycomb optical bread boards (Qty 1)	
	Metric holes M6-1.0 holes on 25mm grid	



(length = 800 to 900mm, width=800 to 900mm and Thickness 50mm to 100mm)

Additional Technical Notes:

1. Tie bars and castors and enclosure should be included in the offer. The one bread board should be included in the offer. The system quoted should have all the necessary details and datasheet for the same.
2. The vendors should submit their latest authorization letter from the manufacturer failing which will lead to rejection of the offer.
3. The details of the manufacturer should be mentioned and the quoted table should be mentioned in the website Also the manufacturer should have ISO9001or similar certifications.
4. Installation at new campus: The equipment may need to be shifted to the new campus of INST within two/three years of installation. The Suppliers should ensure that they could provide all the technical support for re-location of the equipment.
5. Warranty of atleast 1 year or more should be included.
6. AMC rates for next 5 years may be included.

TECHNICAL SPECIFICATIONS FOR CCD CAMERA

Item	Coloured CCD CAMERA
Sensor Type	CCD
Exposure Mode	Electronic Global Shutter
Read Out Mode	Progressive Scan
Pixel Size	4.6 μm x 4.6 μm upto 6.6 μm x 6.6 μm
Resolution	1280 x 1024 Pixels or better
Optical Sensor Dimension (Diagonal)	7.5 mm or larger
Wavelength sensing	400nm-800nm or better
A/D Converter Resolution	8 Bit or better
Readout Mode	Progressive Scan
Frame Rate (Free Run Mode)	15 fps or better
Pixel Clock Frequency Range	5 – 30 MHz or better
Gain	Gain 13.66X or better
S/N Ratio	≥ 38 dB or better
Exposure Time in Free run Mode	66 μs - 1300 ms or better
Binning	Vertical or better
Method	V: Monochrome Binning, Additive or better
AOI	Horizontal, Vertical
Frame Rate at centre	15-40 fps (higher the better)
Hardware Trigger	Asynchronous
Power Consumption	2.5 W
Lens and objective Connector	C-Mount
Protective Window (Manually Removable)	IR Filter with High Quality coating
Interface	USB 2.0 or USB 3.0
Operating Temperature	10 to 45 $^{\circ}\text{C}$ (or more)
End user guide and software package (To be included)	Software working compatibility required as following: 1. Setting of Camera Parameters via software: • Readout Speed • Exposure Time • Triggers to Start / Stop Image acquisition, etc. 2. Time Series Function for Time Lapse Images 3. Possibility to save Images in TIFF, PNG, or JPEG Formats 4. Built-In Functions for Image Examination and Analysis 5. 3rd Party Software Support especially for LabVIEW, MATLAB, μ Manager/ImageJ, Metamorph, etc.
Dimension	As compact as possible for holding on an optical mounting post



Additional Technical Notes:

1. Camera usage Software should be Included in the quote. Camera software should be compatible: 32, 64-Bit Windows® 7, 10, and LabVIEW, Compatible with μ Manager / ImageJ
2. CCD mount, connecting cables, mounting adapters, screws and software's should be included in the offer. The system quoted should have all the necessary details and datasheet for the same. Include: At least two different mounting adapters (One objective connector). Should be mountable to **metric** optical table.
3. The vendors should submit their latest authorization letter from the manufacturer failing which will lead to rejection of the offer.
4. The details of the manufacturer should be mentioned and the quoted CCD should be mentioned in the website. Also the manufacturer should have ISO9001 or similar certifications.

**TECHNICAL SPECIFICATIONS FOR OPTICAL CHOPPER SYSTEM WITH
CHOPPER BLADE**

Optical Head Specifications	
Chopping Blade Diameter	Greater than \emptyset Dia. 100 mm
Chopping Blade Thickness	Greater than 0.25 mm
Mounting Base	Compatible with Metric Breadboards / optical tables
Chopper	
Chopper mount	To be included and compatible with metric optical table
Chopper 1 (Dual Frequency Optical Chopper Blades)	For 20 – 10KHz or more
Chopper 2 (Harmonic Frequency Optical Chopper Blades)	For 10 - 300 Hz or more
General Controller Specifications	
Frequency Resolution	1 Hz or better
Frequency Drift	< 20 ppm/°C
Display	Display screen
Operating Temperature	10 – 40 °C or more
Power Supply	
Supply Type, Voltage, etc.	Compatible with Indian electric system
Fuse	Include 10 no. fuse
Cables	Include cables compatible with Indian electric system
Interface	
Communications Port with computer	USB
Software	To be included

Additional Technical Notes:

1. All connector cables and two reference chopper blades should be included in the offer. The system quoted should have all the necessary details and datasheet for the same.
2. Warranty of at least 1 year or more should be included.
3. The details of the manufacturer should be mentioned and the quoted table should be mentioned in the website. Also the manufacturer should have ISO9001 or similar certifications.



**TECHNICAL SPECIFICATIONS FOR X-Y-Z TRANSLATION STAGE WITH
MOUNTING ADAPTERS (QTY 2)**

Resolution	500 μm or less Translation per Revolution
Travel	25.0 mm or more
Engraving	Every 10 μm or smaller
Taps	Metric

All three parts x-y-z should be mountable / removable manually
Excluding the above x-y-z-system additionally following inclusions are required: a) Right angle Mounting Adapters should be included. b) Plate with compatible slots on the side that enable obstruction-free mounting onto an optical breadboard and optical table.
All components should be of universal metric specification.

Additional Technical Notes:

1. Right angle mount adapter, Compatible adapter to mount a kinematic theta-phi holder should be included in the offer. The system quoted should have all the necessary details and datasheet for the same.
2. The system should be compatible with a metric optical table or bread board with M6 screws.
3. The details of the manufacturer should be mentioned and the quoted table should be mentioned in the website. Also the manufacturer should have ISO9001 or similar certifications.