Global tender for the supply of **X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories**

Contents

This is a global tender for the supply of **X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories**

Section 1 - Bid Schedule

1	**Tender No.**	**MT/ENQ-GTE/PAIR/IIESTS-AM/25-26/01**
2	Tender Date	18 December 2025
3	Item Description	**X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories at IIEST Shibpur**
4	Tender Type	Two-bid system i Technical Bid (Part A) ii Commercial Bid (Part B)
5	Place of tender submission	The Chair, Department of Materials Engineering Indian Institute of Science, Bangalore 560012 E-mail: office.pair@iisc.ac.in
6	Last Date & Time for submission of tender	8th January 2026, 5 PM IST
7	For further clarification	Prof. Abha Misra Department of Instrumentation and Applied Physics Indian Institute of Science, Bangalore – 560012, India E-mail: abha@iisc.ac.in

Section 2 – Eligibility Criteria

Prequalification criteria:

1. The Bidder's firm should have existed for at least 5 years. Bidders should enclose the Company Registration Certificate.

2. Only the Original Equipment Manufacturer or their authorized representatives across the globe shall participate in the bid.

3. The quotations should be CIP-Bangalore Airport.

4. The bidder should sign and submit the declaration for Acceptance of Terms and Conditions as per Annexure 4.

5. The Bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect has to be given as per Annexure 3.

6. The order will be placed only with the bidder who participated in the bid.

Section 3 – Terms and Conditions

A) Submission of Tender:

1) All documentation in the tender should be in English.

2) Tenders should be submitted in two envelopes (a two-bid system).

a. Technical Bid (Part-A) – Technical bid consisting of all technical details and checklist for conformance to technical specifications.

The technical proposal should contain a technical compliance table with five columns:

I. The first column must list the technical requirements in the order given in the technical requirements below.

II. The second column should provide instrument specifications against the requirement. Please provide quantitative responses wherever possible.

III. The third column should describe your compliance with a "Yes" or "No" only. Ensure that the entries in column 2 and column 3 are consistent.

IV. The fourth column should state the reasons/explanations/context for deviations, if any.

V. The fifth column can contain additional remarks from the OEM. You can use this opportunity to highlight technical features, qualify responses of previous columns, provide additional details, compare your solution with your competitors, or provide details as requested in the technical requirements table below.

b. Commercial Bid (Part-B) – Indicating item-wise price for the items mentioned in the technical bid, **as per the format of quotation provided in the tender** and other commercial terms and conditions.

3) The technical bid and price bid should be placed in **separate sealed covers**, superscribing the tender description, tender no., and the due date on both envelopes. Both these sealed covers are to be placed in a bigger cover which should also be sealed and duly superscripted with the Tender No, Tender Description & Due Date.

4) The SEALED COVER should reach to **The Chair, Department of Materials Engineering, Indian Institute of Science, Bangalore 560012**, on or before the due date mentioned in the tender notice. If the due date is a holiday, the tender will be accepted on the next working day. If the quotation cover is not sealed, it will be rejected.

5) All queries are to be addressed to the person identified in "Section 1 – Bid Schedule" of the tender notice.

6) GST/other taxes, levies, etc., should be indicated separately. The BIDDER should mention GST Registration and PAN in the tender document, if applicable.

7) If the price is not quoted in the Commercial Bid as per the format provided in the tender document, the bid is liable to be rejected.

8) The purchase committee reserves the right to accept or reject any bid and annul the bidding process and reject all bids at any time prior to the award of the contract without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders.

9) Incomplete bids will be summarily rejected.

B) Cancellation of Tender:

Notwithstanding anything specified in this tender document, the IISc purchase committee, in its sole discretion, unconditionally and without having to assign any reason, reserves the right:

a. To accept OR reject the lowest tender, any other tender, or all the tenders.
b. To accept any tender in whole or in part.
c. To reject the tender, the offer does not confirm the tender terms.

C) Validity of the Offer:

The offer shall be valid 90 Days from the commercial bid's opening date.

D) Evaluation of Offer:

1) The technical bid (Part A) will be opened first and evaluated.

2) Bidders meeting the required eligibility criteria in Section 2 of this document shall only be considered for Commercial Bid (Part B) opening. Further, agencies not furnishing the documentary evidence as required will not be considered.

3) Prequalification of the bidders shall not imply final acceptance of the Commercial Bid. The agency may be rejected at any point during technical evaluation or commercial evaluation. The decision regarding acceptance and/or rejection of any offer in part or full shall be the sole discretion of IISc Bangalore, and the decision in this regard shall be binding on the bidders.

4) The contract award will be subject to acceptance of the terms and conditions stated in this tender.

5) Any offer which deviates from the vital conditions (as illustrated below) of the tender is liable to be rejected:
a. Non-submission of complete offers.
b. Receipt of bids after the due date and time or by email/fax (unless specified otherwise).
c. Receipt of bids in open conditions.

6) In case any BIDDER is silent on any clauses mentioned in these tender documents, IISc Bangalore shall construe that the BIDDER has accepted the clauses as of the tender, and no further claim will be entertained.

7) No revision of the terms and conditions quoted in the offer will be entertained after the last date and time fixed for receipt of tenders.

8) The lowest bid will be calculated based on the total price of all items tendered for the basic equipment, accessories selected for installation, operation, preprocessing and post-processing, optional items, recommended spares, warranty, and annual maintenance contract. The purchase committee seeks the most cost-effective solution for obtaining a new tool. Vendors are encouraged to propose all avenues, including but not limited to buy back of the existing tool, turnkey upgrade of existing to, l or purchase of a new tool.

E) Pre-requisites:

The bidder will provide the prerequisite installation requirements of the equipment along with the technical bid.

F) Warranty:

The complete system has to be under warranty for a **minimum period of 3 years** (year-wise breakup value should be shown in the commercial bid). The vendor should include the cost of any spares needed during the warranty period, including electronics, subcomponents, and software. If the instrument is defective, it has to be replaced or rectified at the bidder's cost within 30 days from receipt of written communications from IISc, Bangalore.

1. If there is any delay in replacement or rectification, the warranty period should be extended.
2. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
3. Warranty terms and additional warranty options are a must for all the components. Specify the service plan, like whether the local distributor will address the issue or the parent company. A minimum of three years of complete system warranty should be given. If the system requires service during the warranty period, the vendor must guarantee or replace the instrument for free. Vendor to have logistic support to ensure that at least 95% of the service parts are readily available and upkeep delivery within 1 week.
4. A declaration of Conformity certificate and System Validation certificate must be provided. All modules must be GLP compliant.
5. Support should be available on full working days (excluding Public Holidays), local time.
6. On-site installation, commissioning, and training shall be conducted by a qualified factory-trained engineer.
7. The vendor must demonstrate that it has a proven appropriate set-up and capability to provide after-sales service efficiently and effectively. The supplier should have a similar system in their facility to that proposed in this tender for training purposes.
8. The vendor must have a local dedicated Sales & Service team & Application lab in the Southern region.

G) Annual Maintenance Contract:

An annual maintenance contract for at least two years post-warranty may be provided as an essential, optional item upon completion of the warranty period.

H) SPARES:

Vendors must provide a detailed list of spares and a user manual with a detailed Bill of Materials for all Parts. It should include the Spares Column with the Manufacturer part Number, Qty, and availability of stock after 3 Years.

I) Purchase Order:

The quantity of the items in the tender is only indicative. IISc, Bangalore reserves the right to increase /decrease the quantity of the items depending on the requirement.

If the product and service quality is unsatisfactory, IISc, Bangalore reserves the right to cancel or amend the contract.

J) Delivery, Installation, and Training:
The bidder shall provide the lead time to delivery, installation, and made functional at **IIEST, Shibpur**, from the date of receipt of the purchase order. The system should be delivered, installed, and functional within 120 days of receipt of the purchase order. The supply of the items will be considered as effected only on satisfactory installation and inspection of the system and the inspection of all the items and features/capabilities tested by the **IIEST, Shibpur**. **For acceptance, the vendor must demonstrate the technical specifications mentioned in the tender**. After successful installation and inspection, the date of taking over the entire system by the **IIEST, Shibpur**, shall be taken as the start of the warranty period. **No partial shipment is allowed.**

Vendors must demonstrate and validate all claimed system specifications

K) Payment Terms:
Full payment (except AMC) will be released after completion of delivery, satisfactory installation, and qualification, subject to TDS as per rules. Advance payment is acceptable based on mutually agreeable terms. As per GFR, no advance payment can be made to domestic vendors unless an equal amount of bank guarantee is provided.

L) Statutory Variation:
Any statutory increase in the taxes and duties subsequent to the bidder's offer, if it takes place within the original contractual delivery date, will be borne by IISc, Bangalore, subject to the claim supported by documentary evidence. However, if any decrease occurs, the advantage will have to be passed on to IISc, Bangalore.

M) Disputes and Jurisdiction:
Any legal disputes arising from any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction in Bangalore, India.

N) General:

1) All amendments, time extensions, clarifications, etc., within the tender's submission period, will be communicated electronically. No extension of the bid due date/time shall be considered due to a delay in receipt of any document(s) by mail.

2) The bidder may furnish any additional information necessary to establish capabilities to complete the envisaged work successfully. It is, however, advised not to furnish superfluous information.

3) With prior intimation, the bidder may visit the installation site before tender submission.

4) Any information furnished by the bidder found to be incorrect, immediately or later, would render the bidder liable to be debarred from tendering/taking up work in IISc, Bangalore.

5) Price of every line item in the commercial bid should be quoted along with the total quoted price for the instrument to be operational (installed and ready to use) in our facility. Quote the price of each optional line item separately.

6) The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).

7) Items in addition to that listed in the technical table that you would like to bring to our attention, such as data sheets, technical plots, etc. can be listed at the end of the compliance table.

8) Vendors are encouraged to highlight the advantages of their instrument and accessories over comparable instruments from competitors.

9) If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.

10) The Institute reserves the right to accept or reject any bid or to annul the bidding process and reject all bids at any time prior to the award of the contract without thereby incurring any liability of the affected bidder or bidders.

11) After the award of the purchase order, the vendor must provide an Order Acknowledgement within 7 days from the receipt of the Purchase Order.

12) The vendor must have a local dedicated Sales & Service team & Application lab in the Southern region.

13) Vendors must provide proper justification for any technical deviations mentioned in the technical comparison statement during evaluation.

14) A comprehensive three-year warranty must cover all system components and accessories supplied with the equipment.

15) Vendors must submit a detailed list of infrastructure requirements (such as power supply, exhaust, laboratory space, etc.) necessary for installation and smooth operation of the system.

16) The payment terms should be specified in the commercial proposal, which should be consistent with IISc's purchase policies.

17) Provide details of the number of trained personnel in India, the number in the southern region, or Bangalore who can service the instrument.

18) Include other options currently available which can be added in the future.

19) The vendor should attach product brochures along with the technical bid.

20) A set of basic experiments for performing routine checks of acceptable operation with clear instructions to be provided. A standard sample to estimate column efficiency should be included.

21) Details and contact information of at least the last five installations of similar equipment.

22) End-user certificates from these installations, confirming, satisfactory performance.

Section 4 – Technical Specifications

Sl No.	Description	No. of Units
1	**X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories**	**01**

Sl. No	Description	Specifications
1.	**CW X band EPR spectrometer:**	• 9.5 inch or better double yoke Magnet with solid-state power supply with12KW output power (magnetic field homogeneity better than $1X10^{-6}$ / cm^3) • X Band with maximum microwave power 200mW • Latest software packages for data collection, analysis and spectral simulations (details are given below) • Micro Bay Mainframe • Magnetic Field Controller • Signal Channel Module • X-band Solid State Microwave Bridge • Universal High Sensitivity Probe head • 24" TFT Monitor (two pcs) • EPR standard sample set • EPR sample tube set (including flat cells for aqueous samples; Quote them separately)
2.	**Goniometer**	• Programmable one axis Goniometer <1-degree resolution, compatible with Nitrogen based variable temperature units and also compatible with X-band wave guide cavities. • Goniometer for orientation dependent studies for single crystalline samples
3.	**PC System**	• Intel Xeon E5-1620v4 (up to 3.8 GHz), Quad Core • 16GB DDR4-2133 (2x8 GB) RAM • NVIDIA Quadro K620 2 GB GFX graphics card • 2TB 7200 RPM SATA HDD • Integrated Intel I-218 Gbit LAN (SPECT) • Intel Ethernet I210-T1 PCIe NIC (NET) • 9.5 mm Slim Super Multi DVDRW 1st ODD • USB mouse and USB US-Keyboard • Preinstalled Windows 10 (64 Bit) with required EPR softwares. • 24" TFT Monitor (2 pcs for EPR instrument operation and data processing respectively)
4.	**Magnet System**	• Hall operation range: Up to 13 kG <1100 kg, water cooled version • Accuracy: better than 500 mG over the full range • Short term stability: 5 mG or higher • Long term stability: 10 mG or higher • Setting resolution centre field: 1 mG or higher • Maximum field: 13 kG and above • Homogeneity: 10 mG in 10 (Z) x 10 (X) x 22 (Y) mm volume or better
5.	**Detection Mode:**	1st and 2nd Derivative spectra including 1st and 2nd Harmonic with 0° and 90° modulation phase simultaneously

6.	**X-band Microwave bridge operating frequency:**	• X-Band: 9.3-9.9 GHz • VT compatibility: Compatible with liquid N_2, VT liquid N_2 set-up (100–400 K), and closed cycle loop system (4–300K). • Frequency counter: Integrated frequency counter with 1kHz resolution. • Frequency Control: Automatic frequency control (AFC) • Modulation amplitude: 10 ± 1 G @ 100 kHz • X-band sensitivity: 5 x10^9 spins/G • Noise: Low noise: -130dBc/ 10kHz from carrier • Phase correction: Automatic phase correction over attenuation range • Phase shift range: 400° • Phase shift setting resolution: 0.1 degree or better • Reference Arm: Reference Arm with phase shifter • Power Attenuation Range:60 dB in 1dB steps • RT X-Band Cavity ideal for solutions (must be compatible with photo irradiation)
7.	**Probe Head:**	• High sensitivity microwave band compatible probes with liquid nitrogen temperature cooling unit • Standard resonator for high sensitivity CW-EPR
8.	**Sensitivity:**	• Sensitivity Weak Pitch 1500:1 or better • G value correction: The offered EPR system should be able to determine the g value from frequency information and Mn signal with 5-digit accuracy (organic radical). • Simulation: Both Isotropic and Anisotropic Simulation should be possible with the Software.
9.	**Low Temperature Device/ Cryostat:**	• Finger dewar for EPR samples measurement at 77K. Finger Dewars required for temporary storage and handling of samples for both solid and liquids. Quantity needed: 10 Nos. • Cryostat must be compatible with X band resonator and variable temperature measurements should be performed from 100K to 400K (Liquid Nitrogen or Helium) or better measurement option
10.	**Power Supply:**	• Should meet Indian power supply standards preferably without use of external converters • Should provide 3 phase I/O for the system • Solid state power supply with minimum 12 kW output power or better
11.	**Water Chiller and circulator:**	• Should compatible for 12KW systems for magnet system, microwave bridge etc. • Should provide a suitable branded chiller as per the requirement of the instrument. Give separate detailed technical specifications.
12.	**Variable Liquid Nitrogen Temperature Control System**	• Temperature range 100 K to 400K or better in both lower and higher end along with the control unit • Transfer Dewar, Transfer Lines with suitable size and length with proper connector • Integrated Digital Temperature variable unit Liquid N_2 storage cryocan (25L) Quantity needed: 2 Nos. • Cylindrical liquid nitrogen dewar of capacity 1.5 litters for the temporary storage and handling of samples. Quantity needed: 10 Nos. • Quartz made insertion type Dewar of capacity 150 mL or better, for sample measurements at 77K. Quantity needed: 10 Nos
13.	**Accessories:**	• **Aqueous Solution Cell**: 10 No. • **Aqueous Solution Cell holder**: 5 No. • **VT Aqueous Solution Cell**: 10 No.

		• Sample mixing unit: For the measurement of short-lived paramagnetic species. Details of the quoted unit should be mentioned in the offer
14.	**Quartz sample tubes including capillary tubes:**	"**EPR silent**" and CFQ quality sample tubes of varying inner diameter and outer diameter • Set 1: ID: 1 mm, OD: 1.6 mm - 100 Nos. • Set 1: ID: 2 mm, OD: 3 mm - 100 Nos. • Set 2: ID: 3 mm, OD: 4 mm - 50 Nos. • Set 3: ID: 4 mm, OD: 5 mm - 30 Nos. • Capillary tubes -2 sets *Quote them separately
15.	**Calibration sample set:**	Should provide a Standard set of samples for calibration
16.	**UV Irradiation System (100 W): 2 Pieces**	• 100 W UV Irradiation System that provides exposure of EPR samples to light between 200 and 2000 nm., with a suitable connector for the instrument. • 100 W Hg lamp and housing power supply • Mounting stand should be provided • UV safety glasses should be provided
17.	**UV Accessory Band Pass Filter Set: 2 Piece**	• Set of 50 nm bandwidth optical band pass filters from 400-700 nm in 50 nm steps • Holder for the optical band pass filters • Compatible with UV irradiation system and UV irradiation • System for floor standing spectrometers
18.	**UV Fiber Bundle Focusing & Light Guide: 2 Pieces**	• Fiber bundle focusing assembly • Liquid light guide transmitting from 220-600 nm
19.	**Liquid Light Guide Res Mounting Kit MEC: 2 Pieces**	Adaptor for light guide to HS/SHQE resonator
20.	**EPR Software Package:**	• Complete software package for EPR Spectrometer control should be provided; spectral acquisition for Field Sweep, Temperature and Time variation; processing of data, display, print out; simulation, g-value calculation; baseline correction, addition, subtraction, expansion and smoothening of spectra including 2D and 3D spectral display for both liquid and powder samples (Must be compatible for Windows latest versions) • Full software control of all external devices via System Ethernet Network, Spectra Manipulation and Analysis Program, featuring baseline correction (up to 9th order), single and double integration, differentiation, smoothing, addition and subtraction of spectra, peak picking, cursor read-out for position, amplitude and distance, line, dot and cross display, file handling and printing. • Spectra Simulation Program for liquids and powders with isotropic, axial and rhombic symmetry • A simulation suite to perform EPR simulation with the following possibilities full matrix diagonalization for liquids, powders and single crystals including g-tensors, hyperfine interaction, D and E parameters.

21.	**UPS System:**	• Compatible water / air cooled outdoor or indoor chiller with 5-ton capacity along with the power supply and all accessories, • A suitable 30KVA or compatible branded online UPS with having ,3 phrase in / out with 1-hour power back up time. Service for online ups should be provided by the vendor at later stage.
22.	**Printer:**	Branded Laser Jet color printer with Copy / Scan/ USB Mode / Internet / Ethernet
23.	**Warranty:**	• Comprehensive 5 years minimum on-site warranty along with 2 years AMC on all parts of the instrument from the date of successful installation including Liquid Nitrogen Cryostat and UV setup as mentioned above. • All parts including accessories, spares and labor on site • Free maintenance and service on site or at factory with no cost, with Regular up- gradation of all the softwares.
24.	**CMC and Spares:**	• Warranty: All parts including resonator. During the warranty period the spares including the source to be replaced free of cost. • Basic, and frequently required spares should be provided for the entire period of extended warranty. A list of these items should be attached with the quotation. • System should be covered for comprehensive warranty for 5 years from the manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document. • Supplier should confirm the availability of spares for next 10 years from the date of installation. • Warranty should only start from the date of installation of the instrument at the site
25.	**Training:**	• The manufacturer / supplier of EPR should provide at least seven days onsite training initially during installation • The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation • Five days (at least) general entry-level training-cum- workshop and advanced-level training- cum-workshop must be arranged at the user's site by the vendor on experimental and data analysis part, twice in a year with no extra cost involved for a duration of 3 year. • Regular follow up training every six months during the period of extended warranty on mutually convenient dates for hardware, software and application to the laboratory personnel in the installation, operation and maintenance of the instruments.
26.	**Optional:**	• EPR instrument should be completely compatible for installation of CW–Q band EPR Bridge and compatible resonator • Low temperature device based on liquid Helium. All necessary parts for the mentioned setup should be quoted. • Temperature controller for monitoring and setting of sample temperature

27.	**Service and Support:**	• Operation and service manual in English (electronic and hard copy) with complete circuit diagram and PCB layout for all equipment should be provided with the instrument • The manufacturer and/or their Indian representative must have at least two qualified and factory trained service engineer in India to be able to attend to service at IIEST, Shibpur within 72 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender • For warranty period only, factory trained and certified engineers are acceptable to attend the service. • The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement. • In case the parts are required to be imported for repairs, the same should be made available within 3 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 3 weeks) in completing the repairs.
28.	**Pre— Installation requirement:**	Necessary pre-installation requirements i.e., pre-installation site preparation advice should be sent immediately after the placement of the order, a lab layout for the installation of the instrument should be provided by the vendor before the delivery. (preparation of site)
29.	**Installation, commissioni ng and Application Training:**	• Standard samples (if required) to be provided by the company for testing the instruments at the time of installation on site to the quoted accuracy in the given technical specification for the demonstration of the performance of equipment. • All sample handling kits / consumables should also be provided. • Hands on training for personals at installation site International Technical training for minimum one week • Installation, complete interfacing of the system with its subsystems, and commissioning is to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction. • An estimated time schedule for installation, commissioning and training must be provided. • The vendor is responsible for the installation of the system at the institute.
30.	**Service Centre:**	Regional service centre must be in Eastern India with address
31.	**Delivery and installation:**	Item should be delivered to **IIEST, Shibpur**. Any consumables / electrical spares / any other etc. for the installation should be done free of cost. The vendor should provide any spare parts, consumables or accessories required for the installation of the instrument, free of cost.

Technical Compliance Statement

Technical Compliance Statement for **X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories**

Specification	Compliance, please write Yes/No	Make/Brand & Model No. of the Quoted Item	Remark
EPR System			
1. CW X band EPR spectrometer:			
a) 9.5 inch or better double yoke Magnet with solid-state power supply with12KW output power (magnetic field homogeneity better than $1X10^{-6}$ /cm^3)			
b) X Band with maximum microwave power 200mW			
c) Latest software packages for data collection, analysis and spectral simulations (details are given below)			
d) Micro Bay Mainframe			
e) Magnetic Field Controller			
f) Signal Channel Module			
g) X-band Solid State Microwave Bridge			
h) Universal High Sensitivity Probe head			
i) 24" TFT Monitor (two pcs)			
j) EPR standard sample set			
k) EPR sample tube set (including flat cells for aqueous samples; Quote them separately)			
2. Goniometer			
a) Programmable one axis Goniometer <1-degree resolution, compatible with Nitrogen based variable temperature units and also compatible with X-band wave guide cavities.			
b) Goniometer for orientation dependent studies for single crystalline samples			
3. PC System			
a) Intel Xeon E5-1620v4 (up to 3.8 GHz), Quad Core			
b) 16GB DDR4-2133 (2x8 GB) RAM			
c) NVIDIA Quadro K620 2 GB GFX graphics card			
d) 2TB 7200 RPM SATA HDD			
e) Integrated Intel I-218 Gbit LAN (SPECT)			

f) Intel Ethernet I210-T1 PCIe NIC (NET)			
g) 9.5 mm Slim Super Multi DVDRW 1st ODD			
h) USB mouse and USB US-Keyboard			
i) Preinstalled Windows 10 (64 Bit) with required EPR softwares.			
j) 24" TFT Monitor (2 pcs for EPR instrument operation and data processing respectively)			
4. Magnet System			
a) Hall operation range: Up to 13 kG <1100 kg, water cooled version			
b) Accuracy: better than 500 mG over the full range			
c) Short term stability: 5 mG or higher			
d) Long term stability: 10 mG or higher			
e) Setting resolution centre field: 1 mG or higher			
f) Maximum field: 13 kG and above			
g) Homogeneity: 10 mG in 10 (Z) x 10 (X) x 22 (Y) mm volume or better			
5. Detection Mode:			
1st and 2nd Derivative spectra including 1st and 2nd Harmonic with 0° and 90° modulation phase simultaneously			
6. X-band Microwave bridge Operating frequency:			
a) X-Band: 9.3-9.9 GHz			
b) VT compatibility: Compatible with liquid N2, VT liquid N_2 set-up (100–400 K), and closed cycle loop system (4–300K).			
c) Frequency counter: Integrated frequency counter with 1kHz resolution.			
d) Frequency Control: Automatic frequency control (AFC)			
e) Modulation amplitude: 10 ± 1 G @ 100 kHz			
f) X-band sensitivity: 5 x109 spins/G			
g) Noise: Low noise: -130dBc/ 10kHz from carrier			
h) Phase correction: Automatic phase correction over attenuation range			
i) Phase shift range: 400°			
j) Phase shift setting resolution: 0.1 degree or better			
k) Reference Arm: Reference Arm with phase shifter			
l) Power Attenuation Range:60 dB in 1dB steps			
m) RT X-Band Cavity ideal for solutions (must be compatible with photo irradiation)			
7. Probe Head:			
a) High sensitivity microwave band compatible probes with liquid nitrogen temperature cooling unit			

b) Standard resonator for high sensitivity CW-EPR			
8. Sensitivity:			
a) Sensitivity Weak Pitch 1500:1 or better			
b) G value correction: The offered EPR system should be able to determine the g value from frequency information and Mn signal with 5-digit accuracy (organic radical).			
c) Simulation: Both Isotropic and Anisotropic Simulation should be possible with the Software.			
9. Low Temperature Device / Cryostat:			
a) Finger dewar for EPR samples measurement at 77K. Finger Dewars required for temporary storage and handling of samples for both solid and liquids. Quantity needed: 10 Nos.			
b) Cryostat must be compatible with X band resonator and variable temperature measurements should be performed from 100K to 400K (Liquid Nitrogen or Helium) or better measurement option			
10. Power Supply:			
a) Should meet Indian power supply standards preferably without use of external converters			
b) Should provide 3 phase I/O for the system			
c) Solid state power supply with minimum 12 kW output power or better			
11. Water Chiller and circulator:			
a) Should compatible for 12KW systems for magnet system, microwave bridge etc.			
b) Should provide a suitable branded chiller as per the requirement of the instrument. Give separate detailed technical specifications			
12. Variable liquid Nitrogen Temperature Control System:			
a) Temperature range 100 K- 400K or better in both lower and higher end along with the control unit			
b) Including 10 sets of Nitrogen Storage Finger Dewar for EPR Samples measurement at 77K, accessories for the system			
c) Transfer Dewar, Transfer Lines with suitable size and length with proper connector			
d) Integrated Digital Temperature variable unit Liquid N_2 storage cryocan (25L) Quantity needed: 3 Nos.			
e) Cylindrical liquid nitrogen dewar of capacity 1.5 litters for the temporary storage and handling of samples (high quality dewars, they have to hold the temperature for long periods of time). Quantity needed: 5 Nos.			
f) Quartz made insertion type Dewar of capacity 150 mL or better, for sample measurements at 77K.			

Quantity needed: 10 Nos			
13. Accessories:			
a) Aqueous Solution Cell: 10 No.			
b) Aqueous Solution Cell holder: 5 No.			
c) VT Aqueous Solution Cell: 10 No.			
d) Sample mixing unit: For the measurement of short-lived paramagnetic species. Details of the quoted unit should be mentioned.			
14. Quartz sample tubes including capillary tubes:			
"**EPR silent**" and **CFQ quality** sample tubes of varying inner diameter and outer diameter			
a) Set 1: ID: 1 mm, OD: 1.6 mm - 100 Nos.			
b) Set 1: ID: 2 mm, OD: 3 mm - 100 Nos.			
c) Set 2: ID: 3 mm, OD: 4 mm - 50 Nos.			
d) Set 3: ID: 4 mm, OD: 5 mm - 30 Nos.			
e) Capillary tubes -2 sets *Quote them separately			
15. Calibration sample set:			
Should provide a Standard set of samples for calibration			
16. UV Irradiation System (100 W): 2 Pc			
a) 100 W UV Irradiation System that provides exposure of EPR samples to light between 200 and 2000 nm., with a suitable connector for the instrument.			
b) 100 W Hg lamp and housing power supply			
c) Mounting stand should be provided			
d) UV safety glasses should be provided			
17. UV Accessory Band Pass Filter Set: 2 Pc			
a) Set of 50 nm bandwidth optical band pass filters from 400-700 nm in 50 nm steps			
b) Holder for the optical band pass filters			
c) Compatible with UV irradiation system and UV irradiation			
d) System for floor standing spectrometers			
18. UV Fiber Bundle Focusing & Light Guide: 2 Pc			
a) Fiber bundle focusing assembly			
b) Liquid light guide transmitting from 220-600 nm			
19. Liquid Light Guide Res Mounting Kit MEC: 2Pc			
Adaptor for light guide to HS/SHQE resonator			
20. EPR Software Package:			

a) Complete software package for EPR Spectrometer control should be provided; spectral acquisition for Field Sweep, Temperature and Time variation; processing of data, display, print out; simulation, g-value calculation; baseline correction, addition, subtraction, expansion and smoothening of spectra including 2D and 3D spectral display for both liquid and powder samples (Must be compatible for Windows latest versions)			
b) Full software control of all external devices via System Ethernet Network, Spectra Manipulation and Analysis Program, featuring baseline correction (up to 9th order), single and double integration, differentiation, smoothing, addition and subtraction of spectra, peak picking, cursor read-out for position, amplitude and distance, line, dot and cross display, file handling and printing.			
c) Spectra Simulation Program for liquids and powders with isotropic, axial and rhombic symmetry			
d) A simulation suite to perform EPR simulation with the following possibilities full matrix diagonalization for liquids, powders and single crystals including g-tensors, hyperfine interaction, D and E parameters.			
21. UPS System:			
a) Compatible water / air cooled outdoor or indoor chiller with 5-ton capacity along with the power supply and all accessories,			
b) A suitable 30KVA or compatible branded online UPS with having, 3 phrase in / out with 1 hour power back up time. Service for online ups should be provided by the vendor at later stage			
22. Printer:			
Branded Laser Jet colour printer with Copy / Scan/ USB Mode / Internet / Ethernet			
23. Warranty:			
a) Comprehensive 5 years minimum on-site warranty on all parts of the instrument along with two years AMC from the date of successful installation including Liquid Nitrogen Cryostat and UV setup as mentioned above.			
b) All parts including accessories, spares and labour on site.			
c) Free maintenance and service on site or at factory with no cost, with Regular up-gradation of all the softwares.			
24. CMC and Spares:			

a) Warranty: All parts including resonator. During the warranty period the spares including the source to be replaced free of cost.			
b) Basic, and frequently required spares should be provided for the entire period of extended warranty. A list of these items should be attached with the quotation.			
c) System should be covered for comprehensive warranty for 5 years along with 2 years AMC from the manufacturer All parts including spares should be covered under the warranty and this fact should be clearly and explicitly specified in the tender document.			
d) Supplier should confirm the availability of spares for next 10 years from the date of installation.			
e) Warranty should only start from the date of installation of the instrument at the site			
25. Training:			
a) The manufacturer / supplier of EPR should provide at least seven days onsite training initially during installation			
b) The supplier or manufacturer should also provide dedicated five days advanced training subsequent to the above training installation			
c) Five days (at least) general entry-level training-cum- workshop and advanced-level training-cum-workshop must be arranged at the user's site by the vendor on experimental and data analysis part, twice in a year with no extra cost involved for a duration of 3 year.			
d) Regular follow up training every six months during the period of extended warranty on mutually convenient dates for hardware, software and application to the laboratory personnel in the installation, operation and maintenance of the instruments.			
26. Optional:			
a) EPR instrument should be completely compatible for installation of CW–Q band EPR Bridge and compatible resonator			
b) Low temperature device based on liquid Helium. All necessary parts for the mentioned setup should be quoted.			
c) Temperature controller for monitoring and setting of sample temperature			
27. Service and Support:			
a) Operation and service manual in English (electronic and hard copy) with complete circuit diagram and PCB layout for all equipment should be provided with the instrument			

b) The manufacturer and/or their Indian representative must have at least two qualified and factory trained service engineer in India to be able to attend to service at IIEST, Shibpur within 72 hours on submitting a complaint. Training certificates from the manufacturer have to be provided with the tender			
c) For warranty period only factory trained and certified engineers are acceptable to attend the service.			
d) The response time with an engineer on site must be less than 48 hours from the notification of the failure. The company must provide evidence that it can fulfil this requirement.			
e) In case the parts are required to be imported for repairs, the same should be made available within 3 weeks from the date of reporting of the issue. Any extension in this time will need to be compensated by the manufacturer by extending the comprehensive warranty by the excess period taken (i.e. period beyond 3 weeks) in completing the repairs.			
28. Pre–Installation requirement:			
Necessary pre-installation requirements i.e., pre-installation site preparation advice should be sent immediately after the placement of the order, a lab layout for the installation of the instrument should be provided by the vendor before the delivery. (preparation of site)			
29. Installation, commissioning and Application Training:			
a) Standard samples (if required) to be provided by the company for testing the instruments at the time of installation on site to the quoted accuracy in the given technical specification for the demonstration of the performance of equipment.			
b) All sample handling kits / consumables should also be provided.			
c) Hands on training for personals at installation site International Technical training for minimum one week			
d) Installation, complete interfacing of the system with its subsystems, and commissioning is to be carried out by the vendor's factory-trained engineers, followed by a demonstration of the system's performance to the user's complete satisfaction.			
e) An estimated time schedule for installation, commissioning and training must be provided.			
f) The vendor is responsible for the installation of the system at the institute.			
30. Service Centre:			
Regional service centre must be in Eastern India with address			

31. Delivery and installation:			
Item should be delivered to **IIEST, Shibpur**. Any consumables / electrical spares / any other etc. for the installation should be done free of cost. The vendor should provide any spare parts, consumables or accessories required for the installation of the instrument, free of cost.			

Pre-Qualification Criteria

Sl. No.	Criteria	Remarks (Yes/No)
1	Bidders must have supplied identical equipment (same or similar) to other IISc/IISERs/IITs/Central Universities etc. in the last three years	
2	Copies of Purchase orders have to be submitted as an evidence of supply	
3	The bidders also have to submit certificates from the Institute authorities showing successful functioning of the identical equipment supplied to them for the last two years	

Section 5- Technical Bid

The technical bid should furnish all requirements of the tender along with all annexures in this section and be submitted to:

The Chair,
Department of Materials Engineering
Indian Institute of Science
Bengaluru, Karnataka 560012

Kind attn.: Prof. Abha Misra

Annexure-1

The bidder must provide the following mandatory information & attach supporting documents wherever mentioned:

Details of the Bidder

Sl. No	Items	Details
1.	Name of the Bidder	
2.	Nature of Bidder (Attach attested copy of Certificate of Incorporation/ Partnership Deed)	
3.	Registration No/ Trade License, (attach attested copy)	
4.	Registered Office Address	
5.	Address for communication	
6.	Contact person- Name and Designation	
7.	Telephone No	
8.	Email ID	
9.	Website	
10.	PAN No. (attach copy)	
11.	GST No. (attach copy)	

Signature of the Bidder

Name
Designation, Seal Date:

Annexure-2

Declaration regarding experience

To,
The Chair,
Department of Materials Engineering
Indian Institute of Science, Bangalore – 560012

Ref: Tender No: XXXXXXXXX Dated: XXXXX

X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories

Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company / firm has XXXXXX years of experience in **X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories.**

(Signature of the Bidder)

Printed Name

Designation, Seal Date:

Annexure-3

Declaration regarding track record

To,
The Chair,
Department of Materials Engineering
Indian Institute of Science, Bangalore – 560012

Ref: Tender No: XXXXXXX Dated: XXXXX

X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories

Dear Sir,

I've carefully gone through the Terms & Conditions contained in the above referred tender. I hereby declare that my company/ firm is not currently debarred /blacklisted by any Government / Semi Government organizations / institutions in India or abroad. I further certify that I'm competent officer in my company / firm to make this declaration.

Or

I declare the following

Sl.No	Country in which the company is Debarred /blacklisted / case is Pending	Blacklisted / debarred by Government / Semi Government/Organizations /Institutions	Reason	Since when and for how long

(NOTE: In case the company / firm was blacklisted previously, please provide the details regarding period for which the company / firm was blacklisted and the reason/s for the same).

Yours faithfully

(Signature of the Bidder)

Name

Designation, Seal

Date:

Annexure-4

Declaration for acceptance of terms and conditions

To,
The Chair,
Department of Materials Engineering
Indian Institute of Science, Bangalore – 560012

Ref: Tender No: XXXXXXX Dated: XXXXX

X Band Electron Paramagnetic Resonance (EPR) Spectrometer with Liquid Nitrogen setup, Light Irradiation Setup, and Accessories

Dear Sir,

I've carefully gone through the Terms & Conditions as mentioned in the above referred tender document. I declare that all the provisions of this tender document are acceptable to my company. I further certify that I'm an authorized signatory of my company and am, therefore, competent to make this declaration.

Yours faithfully,

(Signature of the Bidder)

Name

Designation, Seal Date:

Annexure - 5

Details of items quoted:

a. Company Name	
b. Product Name	
c. Part / Catalogue number	
d. Product description / main features	
e. Detailed technical specifications	
f. Remarks	

Instructions to bidders:

1. Bidder should provide technical specifications of the quoted product/s in detail.
2. Bidder should attach product brochures along with technical bid.
3. Bidders should clearly indicate compliance or non-compliance of the technical specifications provided in the tender document.

6. Commercial bid

The commercial bid should be furnished with all requirements of the tender with supporting documents as mentioned under:

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total
1.	Essential items noted in the technical specification				
1.a	… (details of essential items)				
1.b	…				
2.	Optional items noted in the technical specification				
2.a	… (details of Optional items)				
2.b	…				
3.	Accessories for operation and installation				
4.	All Consumables, spares and software to be supplied locally				
5.	Warranty (1 year)				
6.	AMC 2 years beyond warranty				

Any additional items

S.No	Description	Cat. Number	Quantity	Unit Price	Sub total

Addressed to

The Chair,
Department of Materials Engineering
Indian Institute of Science, Bangalore – 560012

Kind Attn: Prof. Abha Misra

7. Checklist

(This should be enclosed with technical bid- Part A)
The following items must be checked before the Bid is submitted:

1. Sealed Envelope "A": Technical Bid

1. **Section 5- Technical Bid** (each page signed by the authorized signatory and sealed) with the below annexures:
    a. Annexure 1 : Bidders details
    b. Annexure 2: Declaration regarding experience
    c. Annexure 3: Declaration regarding clean track record
    d. Annexure 4: Declaration for acceptance of terms and conditions
    e. Annexure 5: Details of items quoted
2. Copy of this tender document duly signed by the authorized signatory on every page and sealed.

2. Sealed Envelope "B": Commercial Bid

Section 6: Commercial Bid

Your quotation must be submitted in two envelopes: Technical Bid (Envelope A) and Commercial Bid (Envelope B) super scribing on both the envelopes with Tender No. and due date and both of these in sealed covers and put in a bigger cover which should also be sealed and duly super scribed with Tender No., Tender description & Due Date.