तेजपुर विश्वविद्यालय / TEZPUR UNIVERSITY
(संसद के अधिनियम द्वारा स्थापित केंद्रीय विश्वविद्यालय)
(A Central University established by an Act of Parliament)
कुल सचिव का कार्यालय/ OFFICE OF THE REGISTRAR
नपाम::तेजपुर-784028::असम
NAPAAM::TEZPUR-784028::ASSAM

NOTICE INVITING QUOTATIONS (NIQ)

Online Tenders in 02 bid System (Technical and Financial) are invited through GEM, from reputed manufacturers/authorized dealers for supply and installation of Equipment along with required accessories for the PURSE- DST project of Prof. Utpal Bora, Chemical Sciences.
(Detail Technical Specifications/Compliance Sheet of the above stated equipment are attached separately at Annexure-I)

Please read the NIQ document carefully before participating in the bid. It shall be deemed that submission of bid by the bidder has been done after careful study and examination of the NIQ terms with full understanding to its implications. Any lack of information shall not, in any way, relieve the bidder of its responsibility to fulfill its obligations under the Bid.

The University will reject a proposal for award if it determines that the bidder recommended for award, has engaged in corrupt or fraudulent practices in competing for, or in executing, the Purchase Order. Fraudulent Practice means a misrepresentation of facts in-order to influence a procurement process and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive Tezpur University of the benefits of free and fair competition. Corrupt Practice means offering, giving, receiving, or soliciting of anything of value, pressurizing to influence the action of a public official in the process of this purchase execution.
For any queries /doubt please contact the Store & Purchase Section (e-mail snp@tezu.ernet.in)

General Information about the NIQ

Last date and time for submission of Bids: As in GEM Bid
Date and Time of opening of Bids: As in GEM Bid

GENERAL TERMS & CONDITIONS:

1. The items as desired to be procured through this bid are supplementary to each other and in the execution of the project in its entirety; as such, interested participants may note that they are to quote for all the items as desired to be procured through this bid.
2. **Rates:** Rates quoted should be on **FOR Tezpur University, Napam, Tezpur, Door Delivery Basis**, for indigenous items and **CIP Tezpur University, Napam, Tezpur or Delivered Duty Paid**, for imported item. Failure to comply with this term may lead to rejection of the quotation/bid.
3. ***Quotations should be accompanied by:***
   i) *An **EMD** (in the form of Demand Draft/Banker Cheque) **for 13,50,000/- (Rupees Thirteen Lakh and Fifty Thousand only)** drawn in favor of **"The Registrar, Tezpur University"**, payable at Tezpur. **No request for consideration of earlier deposited EMD will be considered.***
   ii) **Bidders who are MSME/NSIC registered** need to furnish a **"Bid Security Declaration"** (format enclosed at Annexure-III) **in lieu of EMD** accepting that if they withdraw or modify their bids during the period of validity etc., they will be suspended for a **period of Three (03) years** from participating in any future bid invited/published by Tezpur University. Bidders who are MSME/NSIC registered seeking exemption from payment of **Earnest Money Deposit (EMD)** are to submit valid documents in support of their claim. Bidders seeking exemption are asked to clearly mention the category under which the exemption is claimed. The category of exemption under MSME/NSIC will be strictly adhered to.
   iii) ***The original copies of the EMD/Bid Security Declaration (Annexure-III) should be deposited/submitted/reach the office of the undersigned before opening of the Bids in an envelope superscribed as "Quotation/Participation Fee and EMD for Bid No.** (State the Bid No. generated*

*by GEM) **addressed to the Deputy Registrar-S&P, Tezpur University. Failure to do so may result in rejection of the bid.***

4. Bidders are to ensure that they are GST compliant and that their quoted tax structure/rates are as per GST law. The rates should be exclusive of taxes, and the applicable tax percentage should be clearly indicated. Financial/Price Bid format where taxes cannot be mentioned separately. In such cases, the percentage of taxes applicable should be mentioned in the Technical Bid document.
5. Applicable levies, surcharges, and discounts should be clearly indicated item-wise.
6. The Data Sheet/catalogue of the product(s) offered in the bid is to be uploaded along with the bid documents. Buyers can match and verify the Data Sheet with the product specifications offered.
7. **Validity of Quotation:** Quoted rates must be valid for at least **180 days** from the last date of submission of quotation.
8. **Bidder financial standing**: The bidder should not be under liquidation, court receivership, or similar proceedings and should not be bankrupt. Bidder to upload undertaking to this effect with the bid.
9. **Manufacturer authorization**: Wherever Authorized Agency/ Distributors/Partners are submitting the bid, Manufacturers Authorization Form (MAF)/Certificate with OEM details such as name, designation, address, e-mail ID, and Phone No. required to be furnished along with the bid. The authorization must be addressed to the buyer, and the bid should be specific to OEM.
10. **Bidders Turn Over Criteria**: The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution/incorporation of the bidder is less than 3 years old, the average turnover in respect to the completed financial years after the date of constitution shall be taken into account for this criteria.
11. **OEM Turn Over Criteria**: The minimum average annual financial turnover of the OEM of the offered product during the last three years, ending on 31st March of the previous financial year, should be as indicated in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution/incorporation of the OEM is less than 3 years old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for the criteria.
12. **Basis of Evaluation**: Evaluation will be initially done based on the technical specifications as specified in the tender notice. A technical presentation may also be required to be given by the eligible bidders. Accordingly, Financial bids of the technically qualified bidders will be opened.
13. **Literature a must (wherever applicable):** All the quotations must be supported by technical leaflet/literature and the specifications mentioned in the quotation must be reflected/ supported by such technical leaflet/ literature. The model and specifications quoted should **invariably be highlighted** in the leaflet/literature for easy reference.
14. **Dealership Certificate (wherever applicable):** Dealers or Agents quoting on behalf of Manufacturer must upload valid dealership certificate. OEM should have service centres all across Assam, toll free number, Service Matrix & SLA needs to be furnished. Product datasheet, user manuals & brochures etc. need to be furnished against the technical parameters & the same should be available with OEM website.
15. **Quality Certificates:** Valid certificate to prove that the products are genuine and of international standard, as mentioned below, must be uploaded: (a) Manufacturer's certificate; (b) ISO certificate.
16. **Genuine Pricing:** Vendor is to ensure that quoted price is not more than the price offered to any other customer in India to whom this item has been sold, particularly to Universities/IITs/Institutes and other Government Organization.
17. Installation, demonstration, and training-sessions should be conducted/imparted by the selected bidder/ OEM for the delivered equipment as well.
18. **PENALTY FOR DELAYED DELIVERY**: The date of delivery should be strictly adhered to. In the event of delayed delivery, installation & commissioning, the vendor shall be liable for a penalty deduction as per prevailing rule.
19. The University is exempted from paying Custom and Excise duty.

20. Warranty/Guarantee (for a period of 03 years) should be specifically mentioned in the quotation.
21. Irresponsive/incomplete quote will be rejected.
22. No Advance payment will be made.
23. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
24. Quoted price should be inclusive of delivery up to Tezpur University, Tezpur.
25. Applications for release of **EMD** should be submitted to the **Deputy Registrar-S&P.**
26. Apart from the above terms and conditions the University has the right to include any other terms and conditions as and when felt necessary.
27. **Performance Bank Guarantee amounting to Three (03) % of the order value needs to be submitted in the form of a Bank Guarantee in favor of "The Registrar, Tezpur University" on or before the final settlement of the bill. The Performance Bank Guarantee must remain valid for the entire warranty period (if selected) plus 60 (sixty) days.** No interest shall be paid on the Performance Bank Guarantee.
28. **Conditional tenders not acceptable:** All the terms and conditions mentioned herein must be strictly adhered to by all the vendors. Conditional tenders shall not be accepted on any ground and shall be rejected straightway. Printed conditions mentioned in the tender bids submitted by vendors will not be binding on Tezpur University.
29. **Enquiry during the course of evaluation not allowed:** No enquiry shall be made by the bidder(s) during the course of evaluation of the tender till final decision is conveyed to the successful bidder(s). However, the Purchase Committee or its authorized representative (Tezpur University) can make any enquiry/seek clarification from the bidders. In such a situation, the agency shall extend full co-operation. The bidders may also be asked to arrange demonstration of the offered items, in a short period notice, as such the bidders have to be ready for the same.
30. The bidder must submit customer satisfactory certificate of installation and commissioning of similar instrument delivered to other organizations/institutions.

Termination for default: Default is said to have occurred.

a. If the product or any of its component is found having poor workmanship, faulty designs, poor performance and bad quality of materials used.
b. If the agency fails to deliver any or all of the services within the time period(s) specified in the purchase order or any extension thereof granted by Tezpur University.
c. If the supplier fails to perform any other obligation(s) under the contract.
d. Under the above circumstances Tezpur University may terminate the contract / purchase order in whole or in part and forfeit the EMD/PBG as applicable. In addition to above, Tezpur University may at its discretion also take the following actions: Tezpur University may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate Tezpur University for any extra expenditure involved towards goods and services obtained. Besides, the Vice-Chancellor, Tezpur University, and reserves the right to impose any other form of penalty as deemed fit including blacklisting of the vendor.

31. **Selection criteria:**

i. Evaluation Criteria:

*To ensure that each bidder has the necessary qualifications and resources to fulfil its obligations under the contract, the following criteria shall be evaluated. The Eligibility, Financial, Experience & Support criteria should be passed before the technical criteria. Technical criteria will be evaluated and ranked by the award of "**ACCEPT" and/or "REJECT"**. Only the "**ACCEPTED"** vendors will be considered for opening of price bid. The evaluation will be done based on the total value-wise evaluation. In case, a joint venture makes a bid, any one of the members of the joint venture needs to be qualified for each of the criteria mentioned below.*

ii. The L-1 will be selected based on the price of basic equipment and selected accessories as per order of priority.

Eligibility Criteria:

a. The bidder or the OEM should not be blacklisted by Tezpur University or any other Educational /R&D/ PSU/ Govt organizations. A certificate or undertaking to this effect must be submitted.

iii. Technical Criteria

Technical bids will be evaluated and ranked by the award 'Accepted' & 'Rejected'. The price bids of Accepted vendors would then be considered by the concerned Purchase Committee of the institute.

Delivery Period

32. The delivery installation and commissioning should be completed within **45 Days** of the award of BID without any deviation.

Deputy Registrar (S&P)
Tezpur University

Annexure-I

Sl. No.	Specification	Qty
1	TG/DSC Analyzer Hyphenated with FTIR Should have the furnace design with the dual beam (Dual TGA) for the sample and reference measurement. Dual-beam design should have ability to independently measure two TGA samples simultaneously (Dual Sample TGA). Integrated TGA-FTIR automation with vacuum 50 µtorr ($6.66*10^{-5}$mbar) or better. Furnace : Give stable weight signal with automatic opening / closing of furnace and easy-sample loading; the FTIR must be coupled with the TGA-DSC analyser Furnace Temperature range : High Temperature Furnace. Room temperature to 1500 °C or more without changing any hardware Furnace Type : The furnace shall be a platinum-rhodium wire wound ceramic furnace Cooling rate (Programmable) : Furnace Cooling: Forced Air 1500°C to 50°C in < 40 min or better Heating rate (Programmable) : 0.1 to 100 °C/min Temperature ramp rate/ Scanning rate : 0.01 to 50 K (or °C) for entire Temperature range or better Temperature accuracy : Temperature Accuracy: ±1°C or better Dynamic Temperature Precision : ±0.5°C or better Furnace Temperature resolution : 0.001 °C/min Type of balance : Should have the furnace design with the dual beam (Dual TGA) for the sample and reference measurement. Dual-beam design should have ability to independently measure two TGA samples simultaneously (Dual Sample TGA) Measurement range : ≤ 1g Sample Weight Capacity : at least 200 mg (independent of pans) Maximum measurable weight change : at least 200 mg (independent of pans) Minimum sample weight : 0.5 mg Weighing accuracy : ±0.05% or better Weight Repeatability : ± 0.1% or better Weighing Precision : ± 0.1% or better Dynamic Baseline Drift : <50 µg or better (over the measurable temperature range) Balance resolution : 0.2 µg or better Gas Flow Management System : Should automatically switch up to 3 gases. Fully software-controlled mass-flow gas controller (MFC) measure and regulates the gas flow up to 200 mL/min and can automatically switch for auxiliary gases. Suitable cooling : Thermostatic control must be inbuilt TGA facility : Should have the advanced testing modes such as Quasi-isothermal TGA, Hi—Res TGA, Modulated TGA, Modulated DSC and direct Cp measurement High Resolution TGA Mode : Should have high Resolution TGA mode to optimize weight loss resolution using the following (3) modes. Dynamic Heating Rate to automatically and continuously change heating rate as a function of decomposition (sample weight loss). Constant Reaction Rate to automatically and continuously change heating rate to achieve a pre-determined rate of sample decomposition expressed in %/min. Stepwise Isothermal to automatically change from heating to an isothermal hold when pre-selected limits of weight loss in %/min are met. Modulated TGA Mode : Should have ability to apply sinusoidal temperature wave to a sample. Amplitude of sine wave ± 0.01 to 10°C; period from 100 to 1000 seconds. Should Calculates and displays the following kinetic parameters of decomposition on a continuous basis in real time, Activation energy (kJ/mol) Log (Pre-exponential factor) (1/min) ln (rate ratio) Weight amplitude (mg/min) Modulated Temp (°C). Should delivers the above kinetic parameters of decomposition in a single scan (data file); no need for multiple scans.	1

	Should measure Kinetic parameters calculated using a Discrete Fourier Transformation. Should modulate temperature during quasi-isothermal methods to evaluate the decomposition kinetics of a single weight loss. Software : There must be able to view the following signals in real-time during the experiment: Total Heat Flow, Total Heat Capacity, Reversing Heat Capacity, Reversing Heat Flow, Non-Reversing (Kinetic) Heat Flow, Modulated Temperature, Modulated Heat Flow, Heat Flow Phase, Reference Sine Angle, Temperature Amplitude, Heat Flow Amplitude Calorimetric data sensitivity : DSC : 0.1 µW (microwatt) or better Enthalpy reproducibility : Better than ±1% Enthalpy Accuracy : < 2% or better Operation of furnace : System should allow to open and close the furnace by software Touch Screen : The Instrument must include touch screen capable of recalling and running preprogrammed methods, loading, taring, and monitoring running experiment. Autosampler : The Instrument should include an autosampler that can be configured to accommodate up to 30 samples or more. The reference pans should be configurable to any of the positions in the 30-position tray. The autosampler must be capable of loading and unloading both sample and reference pans. The autosampler shall employ mechanical finger-style gripper, not a suction device. The autosampler shall be controllable through a touch-screen display, or by some other means independent of the controlling computer. The autosampler shall not require regular lubrication. Tray shall be removable to expedite sample loading and unloading. Software shall include auto-tare feature to tare each pan unattended. Instrument must be capable of performing a unique experiment on each sample within one loaded sample tray. The Instrument shall employ position calibration routines via the touch screen to ensure reliable performance. Crucible : Standard Alumina Crucibles (~90 µL) – 300 No (suitable for high-temperature analysis up to 1500 °C.) Alumina Crucible Lids –300 nos Necessary crimping toolkit for Aluminium crucible FT-IR transfer line : FT-IR transfer line should have standard length with temperature selectable from ambient to 300°C. IR sampling kit : for transmission analysis: should include liquids sampling, transmission cells, KBr windows (rectangular for liquid cell), CaF2 windows (rectangular for liquid cell) and related accessories for all types of samples and tool kit Standard samples for calibration : System should come with at least 5 standard samples (Ag, Au, Ni, Sn, Pb, In, Zn, Al etc.) to do Temperature and heat flow calibration Mass flow controller : System should be equipped with Mass Flow Controller which allow to mix one carrier gas out of 3 (up to 200 ml/min) with an auxiliary/reactive gas (0.3 to 16 ml/min) Software : Software Package should be integrated software for data acquisition, processing, evaluation and reporting of thermal and IR-spectroscopic data. Data processing, evaluation and reporting modules should support for multi users. Software updates must be provided perpetually. Spectral Range : The system should have a spectral range from 7500 cm-1 to 350 cm-1 or -1 25000 to 20 cm -1 extended range (optional)] Rapid scan(optional): The system is applicable for the rapid scan measurement at better using suitable beam splitter (MIR source and DLaTGS detector). Signal to noise ratio of the system : 47000:1 or better Wavenumber precision : Repeatability <0.0005 cm-1 Wavenumber Accuracy : 0.01cm-1 Resolution : 0.25cm-1 or better Photometric accuracy : 0.1% T Spectra scan rate : Standard or max 25 spectra/second at 16 cm-1 optical resolution.	

	Interferometer : Interferometer must be permanently aligned, high stability wear free design with 10 years warranty on scanning mechanism. Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. Spare parts availability : The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	
1.A	Dedicated workstation: Computer i7 (12" generation or higher),8GBmDDR4, ITB SSD with Intel Original Motherboard, keyboard, optical mouse, Windows® 11 Pro or Enterprise (64-bit editions only), 27 inch wide monitor One Laser Printer One 8 kVA online UPS with at least 45 mints back up	1
1.B	Anti-vibration tables for TGA FTIR with appropriate size dimension	2
1.C	Dry Nitrogen Gas cylinders (99.995% purity) with two stage SS regulator	1
1.D	Analytical Weighing Balance: Analytical Weighing Balance with capacity: 120/220 gm and readability: 0.01 mg (0.00001 g)	
2	GCMS & GC with FID & TCD Detector Gas Chromatograph: A Latest and highly sensitive Gas chromatograph with single quadruple mass spectrometer system Gas Chromatograph with Advanced / Electronic Flow control technology for Simultaneous Pressure, Temperature and Flow Programming. Column Oven with a capacity to accommodate one or more large column with temperature range from near ambient to 450°c or better Temperature Accuracy: ⍰1% or better. Oven temperature programmed rate setting should have wide range from ambient to at least 120 °C/min or better Temperature set point resolution: 0.1 °C All GC Controls should be displayed in the Touch Screen Electronic Control of Detector Gases Constant Linear velocity mode, constant pressure, constant flow mode should be available User Selectable pressure units of psi, kPa, or bar Fast oven cooling speed 400° C to 50° C in 4 minutes or less. Functions such as analysis counter, automatic ON/ OFF scheduling, etc The system should be able to use Hydrogen and Nitrogen also as carrier gas in addition to helium. System should have Sleep/Wake Function to put the GC into sleep mode when not in use to save valuable energy Retention time repeatability: <0.0008 min or better Overheat protection should be available. Peak area repeatability : <0.5 % RSD or better Inlet: 1 No : The system should be offered with one inlet Liquid injector (Split/Splitless) Inlet shall have EPC/ advanced electronic flow control modules with Pressure set points adjustable in increments of 0.001 psi or better, with typical control ±0.001 or better for the range 0.001 to 100 psi Temperature rage up to 400°.C/min or higher with fully EPC/equivalent Split ratio range up to 12000:1 or higher Inbuilt Gas Saver mode must be available. All in One Sampler Auto Sampler for Liquid / Head Space / SPME- 1 No : Headspace analysis, liquid sample injection, Headspace Injection and SPME for GCMS & GC FID, TCD Liquid Injection : 120 Samples with 2ml Vials, LIQUID Syringe volume : 0.5, 1, 5, 10, 25, 50 and 100µl,	

	Filling Sample volume: as low as a step of 0.1ml Air volume: as low as a step of 0.1ml Filling speed: 1-100µl/sec. Injection speed: 1-100µl/sec Injection depth: programmable Pre and post injection delay: 0-99s or more Liquid Injection of 120 samples to be performed automatically. Headspace Sampler : Oven positions: 6 Oven temperature: ambient; 40-170°C Shaking method: orbital Shaker speed: Low to High Incubation time: 0-999min Syringe volume: 2.5ml Cleaning system: inert gas flushing Vial Leakage Check: Should be available. Syringe temperature: ambient; 40–150°C Sample volume: steps of 0.01ml 40 Sample - 20ml Vials Capacity SPME: SPME Extraction mode: liquid phase/headspace vapors Fiber type: 10mm, 20mm, sealed tip. Temperature: 210-300°C Cleaning system: inert gas flushing Mass Spectrometer: The mass spectrometer must have Electron ionization (EI) modes supplied as standard. EI Scan sensitivity: 1000:1 or higher, Injection of 1 pg of octafluoronaphthalene Instrument detection limit (IDL) EI mode SIM*1: Injection of 20 fg octafluoronaphthalene IDL < 5 fg or better The instrument should have future upgradability The mass spectrometer must be equipped with an ultra-high sensitivity ion source. The mass spectrometer should be able to scan at a faster scan rate to achieve more information and more data points for accurate quantitation. The mass spectrometer should have a stability of +0.1µ/ 48 hours. The mass spectrometer must have a dynamic range of 106 or better. Quadrupole : High-precision hyperbolic quadrupole mass filter Plug-in pre-filter system for higher sensitivity. Mass Range : It should have a mass range of 1 to 1022amu or better with unit mass resolution over the entire mass range. Scan Rate : Scan speed up-to 22,222 Dalton/sec (µ/s) or better. Higher scan rates are preferred. Sensitivity : EI scan sensitivity: Signal-to-noise (S/N) > 1.000 at m/z. 272 for 1 pg Octafluoronaphthalene Additionally TI Can be added IDL : EI Instrument Detection Limit: IDL ≤ 5 fg or better with Octafluoronaphthalene (OFN) injection of 20fg SIM Turbo Molecular Pump : The vacuum system should consist of a high-capacity turbo molecular pump A large, high-efficiency differential evacuation system more than 400L/s or better Detector: Conversion dynode/ion multiplier detection Detection of positive/negative ion Additional Consumables: The supplier shall include and specify the kits of relevant equipment parts and accessories along with tool kit. Autosampler vials with caps: 200 Nos Septa: 300 Nos or more Ferules: 20 Nos	

	Liner: 20 Nos Column Nuts: 4 No. MS Column Nuts: 2 No. Filament: El: 1 Helium Trap: 2 No Vacuum Pump Fluid: 5 L or more Auto Sampler Liquid Syringe -1 no Auto Sampler Headspace syringe - 1 no Suitable capillary column of 30 m length for the analysis of volatiles and semi-volatiles – 3 Nos. Library: The latest NIST Library 2023 original must be supplied Standards: GCMS Standard should be supplied Gas Lines and Cylinders: The vendor should arrange for all gas lines, regulators, purification panels, cylinders (He – 2 Nos, N2 – 2 Nos) Software: The system should be supplied with original software with a license to control GCMS and other accessories, should be operated from the main chromatography data handling software and integrated with it. Gas Chromatograph with FID & TCD Detector, Gas Sampling Valve & Methanizer, GC - Column Oven: Forced air circulation type Temperature range: Room temperature +5 to 450°C Temperature increase time: 20 to 450°C within 11 minutes (With the heater of the inlet port and detector off, room temperature at 20°C, power line voltage at 220VAC) Cooling time: 450 to 50°C within 6 minutes (With the heater for the inlet port and detector off, after setting for 1 minute at 450°C, power line voltage at 220VAC, room temperature at 20°C) Temperature deviation: 0.01°C/°C (Room temperature 10 to 30°C) Number of program steps: Minimum of 7 or more(Including temperature rising and cooling steps) Temperature program increase speed: Settable within a range from 0 to 99.9°C/min (increments of 0.1 °C/min) Programmable time: 999.99 minutes (total of all steps) Number of files: 30. Sample Injector – Packed – 1 No Split/Spliless Injector – 1 No Type for packed columns : Direct Inlet – SS & Glass Column Electronic Pressure Flow Control for the direct inlet(Packed Injector) Type for capillary columns : Split/Splitless Inlet –Capillary Column Electronic Pressure Flow Control for the split/splitless inlet(Capillary Column Injector) Temperature range : Room temperature to 450°C for Packed & SSL Injectors Flame Ionization Detector (FID) Temperature range: Ambient to 450°C Detection sensitivity: 0.01 Coulomb/g (Cumene) Automatic ignition: Standard provision Dynamic Range: 10 7 Automatic ignition: Standard provision Thermal Conductivity Detector (TCD) Temperature range: Up to 350°C Filaments: 110 Ω rhenium tungsten. 4 elements Current setting: 0 to 200 mA (increments of 1 mA) or better. Electronic Pressure Flow Control for the split/splitless inlet Pressure range: 10 to 800kPa (increments of 0.1kPa)	

	Column flow range: Helium : 0.01 to 800 mL/min (increments of 0.01mL/min) or better. Nitrogen, Argon : 0.01 to 500 mL/min (increments of 0.01mL/min) or better Split flow range: Helium : 5 to 800 mL/min (increments of 0.1mL/min) or better Nitrogen, Argon : 0.01 to 500 mL/min (increments of 0.1mL/min) or better Control mode: Flow control, Pressure control Number of pressure program steps: Minimum of 7 or more Pressure program increase speed: Settable within a range from 0 to 999.9kPa (increments of 0.1 kPa) Electronic Pressure Flow Control for Packed Injector Pressure range: 10 to 800kPa (increments of 0.1kPa) Column flow range: 5 to 100 mL/min (increments of 0.1mL/min) or Better. Nitrogen, Argon : 0.01 to 500 mL/min (increments of 0.01mL/min) or better Split flow range: Helium : 5 to 800 mL/min (increments of 0.1mL/min) or better Nitrogen, Argon : 0.01 to 500 mL/min (increments of 0.1mL/min) or better Control mode: Flow control, Pressure control Number of pressure program steps: Minimum of 7 or more Pressure program increase speed: Settable within a range from 0 to 999.9kPa (increments of 0.1 kPa) Software 2 Channel Integrated Software for Chromatographic instrument control & Data Processing. Manual Gas Sampling Valve 6 port Gas Sampling Valve with 0.5ml, 1.0ml & 2ml Loop should be in included. Methanizer Reactor Furnace: Nickel Catalyst Tube SUS O.D.4 × I.D.3 × L200 mm Tubing Connection: 1/16 inch SL type ferrule Heater Controller: Temperature Setting Range: 0 – 450 °C (Digital setting in 1 °C steps) Temperature Sensor C.A (K) thermocouple Load Capacity: MAX. 400 W Temperature Control Method: PID SSR control with auto-tuning Temperature Regulation Accuracy ±0.5% of set value Packed Column 4m x 3mmId for H2 & O2 2m x 3 mm id for CO, CO2, CH4 Reference Standards FID Standard, Calibration Gas, Sampling Bag – 2 Nos. Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	
2.A	UPS - 10KVA Online UPS with isolation transformer with 1 hour backup Desktop Computer and Printer	1
2.B	He, H2, N2, Ar ,Zero Air Gas Cylinders each 1 No with SS Regulators,	1
2.C	Gas Purification Panel each one No & SS Tubing 500 feet, Casing 75 feet. Nuts & Ferrules & Stepdown Transformer should be included.	1
2.D	Gas Tight Syringe -2.5ml & 1.0ml Capacity each one supplied.	1
3	Electrochemical Workstation Electrochemical Workstation with minimum 5 channels having at least two (02) channels with Impedance (EIS) and System having in-situ Raman facility	1

	Multi-channel Electrochemical work station for testing and evaluating. Corrosion, super capacitor, solar cell, Fuel cell and All Battery components in single/multiple unit cells simultaneously with high accuracy and precision Chassis: Multichannel Single Chassis (Channel No 5 or more) High Precision Columbic Efficiency Determination upto 10 PPM At least 2 channels should have Electrochemical Impedance Spectroscopy (EIS) measurements with Equivalent Circuit Modelling Internal Resistance Determination Software Controlled Data Acquisition with Minimum Sampling rate. Floating mode and Ground mode both should be available. EIS quality Indicator for measuring Total harmonic distortion and Noise to Signal ratio will be added advantage Options for measuring Ewe Vs ref and Ece Vs Ref both simultaneously On-site hardware calibration should be available Specification for Channels : Cell Connection: 2, 3, 4, 5 electrodes (+ ground) or more and at least 1.5m Cell cable Compliance voltage: ± 12 V or better Applied Voltage: ±10 V or better Maximum Output Current: ± 500 mA or better Current Ranges: ± 10 nA to ± 500 mA or better, Current resolutions: 800 fA or better Resolution of applied potential:4μV or better Potentiostat Rise/fall Time: <500 nS or better Frequency range: 10 μHz to 3 MHz or better Input Impedance: 1TOhm or better Gain bandwidth range of amplifier: 1 MHz or better Bandwidth of Potentiostat: 1 MHz or better Input bias current: 20 pA or better Cyclic Voltammetry with scan rates 0.001 mV/Sec to 1000V/sec or better AC Amplitude: 0.5 mV-2.5 V or higher Interface for connection with PC: Ethernet LAN and USB Local Area Network to access Multiple Computers Possibility to upgrade to high current up to 30 A using booster Complete software with Advanced Techniques: Battery/Super capacitor testing software Corrosion software Voltammetry software Pulse Software Impedance Spectroscopy software Photovoltaic & Fuel cell testing software Equivalent circuit fitting software Life time up gradation of the software is free Saves the unprocessed sample and background spectra in pixels, as well the processed spectrum with both X and Y axes calibrated Offers spectral file formats: txt, txtr, spc& csv, and exports spectral files to Excel Electrochemical Impedance Spectroscopy (EIS) : Two (02) of the channels should have EIS measurement facility with frequency range 10uHz to 3 MHz or higher and amplitude 0.5 mV to 2.5 V or better Real-time fit and simulation analysis as well as live data plotting option for simulation plot must be available as default software protocol. Real time needed for Lissajous curve, Nyquist, Bode, Admittance and Dielectric & Mott-Schottky. The fit and simulation software should include basic options such as find circle, element subtraction and an equivalent circuit library with all the modern EtS equivalent circuit models. Minimum visible plots in real time should be 8 or more. EIS Modelling with Equivalent Circuit Fits. Simultaneous impedance measurement at counter electrode and working electrode.	

	Raman Specifications : High Performance Laboratory Raman Analyzer Diode pumped solid state (DPSS) laser/ diode laser (532 nm). Adjustable optical power output from zero to 30mW or better. Electronic laser shutter control Sensitivity Spectral Range: 100 - 3100 cm^{-1} or higher Detector: High-sensitivity CCD array detector. Cooling: CCD must be thermoelectrically cooled to -60 °C for improved noise performance. Spectral Resolution: Average spectral resolution of ≤ 6.5 cm^{-1} or better Pixel Resolution: Should have better pixel resolution 1.8 cm^{-1} Dynamic Range: 16-bit signal intensity resolution. Noise Performance: Features CCD detector camera cooled to-60 °C for very low noise Fiber Optics Probe for Raman Spectroscopy Excitation Wavelength: 532 nm Rayleigh Rejection: Minimum optical density (OD) >8 at laser wavelength. Working Distance: 7 mm or better Fiber Optic Cable: 1.2 meters, with optional extension to 3 Sample Holders: Vial or cuvette holders for liquid sample analysis. XYZ probe holder/stage for focus and sample positioning is required. Control Software: Proprietary or standard software must be included for instrument control and spectral acquisition. Power Supply: 19 VDC or compatible system 100-220 C input, 50/60 Hz or better Operating Temperature Range: 10-35°C or better Accessories and specifications In-situ Raman cell, WE, RE & CE- 2 no. or higher with hardware. In-situ Raman cell must have provisions to hold battery working electrode or glassy carbon electrode, Ag/AgClreference electrode and Pt counter electrode, it should be air tightcell, in and out gas (N_2, CO_2 etc.) flow should be possible, it should have quartz window Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment.	
3.A	Computer Accessories/ Specifications : Branded Desktop computer, i7 Processor, 16GB RAM, 512 GB Hard Drive/SSD or better, 24" Monitor, 3 KVA online UPS with 1 hr backup, Keyboard & Mouse.	1
3.B	Ag/AgCl reference electrode	5
3.C	Hg/HgOor Hg/$HgSO_4$ reference electrode	5
3.D	Working Electrode: At least ten (10) no's Glassy Carbon disc electrode per cell Pt wire counter electrode	5
3.E	Complete set up of basic electrochemical cell (including 5 numbers of 50ml cell with holder and cover) ITO Plate CG-50IN-1507, Unpolished Float Glass, 150 x 150 x 0.7 mm, SiOz passivated / Indium Tin Oxide coated one surface, 8-12 S, cut edges	1
3.F	Data Acquisition System	1
3.G	Cylinder with regulators and necessary piping: N_2(1), O_2(1)	1
3.H	Polishing Kit	3
Optional Accessories :		
3.I	Hydraulic coin cell crimping machine	1
3.J	Coin cell crimping for CR2032, CR2016	1
3.K	The Pressure gauge : 80-100kg/cm^2	1
3.L	Battery seal height limit adjustment	1
3.M	Oil discharge valve L232 * W165 * H320mm ; Operation force of hand rocker:< 5.5kg	1
3.N	Complete 2032 Coin cell parts including upper case, lowercase, O-ring and spacer-	1000

3.0	Electrode disc cutter (disc diameter: 8 mm to 1.2 mm)	1
4	Photoelectrochemical Workstation Multichannel Photoelectrochemical Workstation with minimum three (03) channels having at least one (01) channel with EIS facility and 4 electrodes compatible (RE, WE1, WE2, and CE) Specification for Channels: Compliance voltage: ±12 V or better Applied Voltage: ±10 V or better Compliance current: ± 1A or better Current Ranges: ± 10nA to ± 1 A or better, Current resolutions: 800 fA or better Resolution of applied potential: 150μV or better Potentiostat Rise/fall Time: < 1 μs or better Frequency range: 10 μHz to 3 MHz or better Input Impedance: 1TOhm or better Bandwidth of Potentiostat: 1 MHz or better Input bias current: 20 pA or better Voltammetry with scan rates 0.001 mV/Sec to 100V/sec or better AC Amplitude: 0.5 mV- 0.7 V or better Interface for connection with PC: Ethernet LAN and USB Local Area Network to access Multiple Computers Possibility to upgrade to high current up to 2 A or better using booster Complete software with Advanced Techniques: Voltammetry software (CV and LSV) Chrono methods Pulse Software Impedance Spectroscopy software iR correction or Current interrupt Corrosion software Battery/Super capacitor testing software Photovoltaic & Fuel cell testing software Equivalent circuit fitting software Life time upgradation of the software is free Saves the unprocessed sample and background spectra in pixels, as well the processed spectrum with both X and Y axes calibrated Offers spectral file formats: txt, txtr, spc & csv, and exports spectral files to Excel Electrochemical Impedance Spectroscopy (EIS) : The channel should have EIS measurement facility with frequency range 10 μHz to 3 MHz or higher. Real-time fit and simulation analysis as well as live data plotting option for simulation plot must be available as default software protocol. Real time needed for Lissajous curve, Nyquist, Bode, Admittance and Dielectric & Mott-Schottky. The fit and simulation software should include basic options such as find circle, element subtraction and an equivalent circuit library with all the modern EIS equivalent circuit models. Minimum visible plots in real time should be 8 or more EIS Modelling with Equivalent Circuit Fits. Light Module: Lamp type: Short Arc Xenon Lamp Density Range: 0.1 - 1 Sun or better Lamp Power: 400 W or better. Wavelength Range: 300 – 2000 nm or better Current Range: 15 – 25A Features: Light can be used in any direction without attached any fibre optics connection. Light source should be stable and beam diameter should be narrow The system should have air cooling system Accessories	1

	AM 1.5G filter: AM1.5 to simulate SUN (300nm to 1100nm) : - 1 no UV REF filter: Reflect UV, 210-390nm :- 1 no Vis REF filter : Reflect Visible Light, 350-700nm :- 1 no Lasers: 635nm, 650nm, 780nm with power adapter. Cell: - 1 no Cell size: submerged light window: 50ml and Total volume: 70ml. Effective diameter of light window: 24 mm (Approx.). Should be made of quartz. Cell top should have 3 electrode hole and 2 vent hole. Accessories: Cell Volume: Each cell should be approx 50 mL or suitable for standard lab-scale electrochemical experiments Working Electrode: At least five no's Glassy Carbon disc electrode per cell; optional: Pt or ITO/FTO electrodes (Minimum 10 packets). Reference Electrode: Each cell should include five Ag/AgCl reference electrode or equivalent (e.g., Calomel). Counter Electrode: Five Platinum wire counter electrode per cell. Polishing kit: 2 Nos or More Sample Holders: Provision for standard three-electrode configuration. Cylinder with regulator: $N_2(1)$, $O_2(1)$ Name of the original manufacturer to be mentioned clearly in the quote A catalogue of the model has to be submitted. The system should come with a minimum of 3 years warranty. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team; at On-site free of cost.	
4.A	Computer Accessories/Specifications : Branded Desktop, i7 Processor, 16GB RAM, 512 GB Hard Drive/SSD or better, 24" Monitor, 3 KVA online UPS with 1 hr backup, Keyboard & Mouse.	1
4.B	Cell Volume: Each cell should be approx 50 mL or suitable for standard lab-scale electrochemical experiments	1
4.C	Working Electrode: At least five no's Glassy Carbon disc electrode per cell; optional: Pt or ITO/FTO electrodes (Minimum 10 packets).	1
4.D	Reference Electrode: Each cell should include five Ag/AgCl reference electrode or equivalent (e.g., Calomel).	1
4.E	Counter Electrode: Five Platinum wire counter electrode per cell.	1
4.F	Polishing kit: 2 Nos or More	1
4.G	Sample Holders: Provision for standard three-electrode configuration.	1
4.H	Cylinder with regulator: $N_2(1)$, $O_2(1)$	1
5	BET Surface Area Analyzer The system should be automatic and capable of carrying out physisorption of various gases and should have features to measure the adsorption/desorption isotherms, surface area, pore size distribution of Microporous, Mesopores and Macroporous materials. Measurement & Principle : Volumetric gas adsorption technique. Analyzer Capability : Gas sorption isotherm, BET specific surface area, BET automatic analysis, Langmuir specific surface area, BJH, DH, Cl, INNES method, t-plot, Adsorption rate measurement, differential adsorption isotherm, NLDFT/GCMC models, etc. Simultaneous and parallel analysis with 3 or more analysis ports. Adsorptive Gases : Should be compatible with N_2, Ar, Kr, CO_2, H_2, O_2, CH_4, NH_3, butane and other non-corrosive gases. Port for Saturation Vapor Pressure : System should have a dedicated port with its own pressure sensor to measure saturation vapor pressure. The material should be either SS or glass. Gas Inlet Ports : Gas ports for 3 or more gas inlet connections with automatic port selection through software. Sampling Stations : At least one of these ports should be suitable for micropore analysis.	1

	Measurement Range : Surface area: 0.01 m^2/g and above with (N_2, Ar) and 0.0005 m^2/g and above with (Kr) Pore Diameter Range: 0.35–500 nm or better Low pressure isotherm starting from $P/P_0 = 10^{-8}$ or better 0.99 Pressure Transducers : 1000 Torr or better 10 Torr or better 1 Torr or better High Vacuum System : Analyser should have a turbo-molecular pump for ultra-high vacuum coupled with a fore pump Void volume correction : Void volume correction should be made available. Sample Pretreatment : The instrument must have 3 or more degassing stations with access to turbo vacuum Degassing temperature control should be up to 400 °C or better The system must ensure completion of degassing. Cryo cooling : Dewar vessel of capacity: 2.5 L or more, with LN_2 holding time: 70 hours or more Analysis capability : To perform single point, multi point BET surface area, Langmuir, external surface area, pore size distribution, total pore volume, average pore size. Liquid N_2 container : 20 L Liquid nitrogen container with liquid nitrogen transfer device should be supplied Analysis manifold temperature : Analysis manifold temperature – within range of: 30–45 °C Software for instrument control : The control software should be an original licensed copy software. It should display instrument status, trend chart and real time isotherm parallel for all the samples during measurement. Required analysis software for measured data should be provided. Default templates with measurement parameters should be available along with flexibility to set the parameters as per user requirement. Software should allow alteration of measurement parameters during sample measurement. The software should display the gas adsorption/desorption isotherm for the sample measurements. Facility to monitor the progress of measurement in real time should be available. The software should have data handling features like user-defined report generation, data/figures export to spreadsheets (ASCII files import/export, Word/Excel compatibility, PDF formats) and offline data processing, etc. Software for Analysis / measurement : Software should be capable of calculating specific surface area by Langmuir and BET equations. Software should have the provision to measure the pore volume, pore area for mesoporous samples based on BJH, DH, CI, INNES method. Software should have the provision to measure the pore volume, pore area for mesoporous samples based on BJH, DH, CI, INNES method. Software should have the provision to calculate the pore specific surface area based on Adsorption/Desorption. t-plot, αs plot, MP method should be available for the evaluation of Microporous samples. Software for adsorption rate measurement, differential adsorption isotherm, NLDFT/GCMC models, Dubinjn-Astakhov method should be included. Different standard t curve data (at least five standard curves) should be available for data evaluation. Software should have molecular probe method. Software should be capable of parallel plotting the values during measurement. Features like isotherm overlay, BET plot overlay, differential isotherm should be available. Software should have the provision to export data to spreadsheet and plotting programs using CSV file format or any other data format.	

	Facility to speed up the measurement with optimum amount of gas dosing based on adsorption isotherm data from previous sample measurement should be available. The analysis software for measured data should be provided. The software should have data handling features like user-defined report generation, data/figures export to spreadsheet and offline data processing etc. Software should be capable of calculating specific surface area by Langmuir and BET equations. Software should have the provision to measure the pore volume, pore area for mesoporous samples based on BJH, DH, CI, INNES method. Software should have the provision to calculate the pore specific surface area based on Adsorption/Desorption. t-plot, αs plot, MP method should be available for the evaluation of Microporous samples. Software for adsorption rate measurement, differential adsorption isotherm, NLDFT/GCMC models, Dubinin-Astakhov method should be included. Different standard t curve data (at least five standard curves) should be available for data evaluation. Software should have molecular probe method. Software should be capable of parallel plotting the values during measurement. Features like isotherm overlay, BET plot overlay, differential isotherm should be available. Software should have the provision to export data to spreadsheet and plotting programs using CSV file format or any other data format. Facility to speed up the measurement with optimum amount of gas dosing based on adsorption isotherm data from previous sample measurement should be available The analysis software for measured data should be provided. The software should have the data handling features like user defined report generation, data/ figures export to spread sheets and offline data processing etc. The manufacturer/supplier of instrument should provide onsite training in both hardware and software to the laboratory personnel in the installation, operation, and maintenance of the instruments. Pre-installation Requirements : Complete technical details of pre-installation requirements should be furnished along with the bid. Vendors are required to quote all other installation accessories, and services required for successful installation and smooth operation of the equipment. The system should be fully upgradeable to Vapor sorption option. When system is upgraded to 3 ports, system should have capability to analyze a sample with 3 separate probe gases simultaneously Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost.	
5.A	Computer & UPS : Branded Desktop computer, i7 Processor, 16GB RAM, 512 GB Hard Drive/SSD or better, 24" Monitor, 3 KVA online UPS with min 30 min or better backup, Keyboard & Mouse.	1
5.B	Gas Regulators & Cylinders : 99.999% Nitrogen, Helium, CO_2 & Zero air 47-liter Capacity Gas Cylinder along with Double stage SS regulators & all tubing's & connectors, nuts, ferrules should be supplied.	1
5.C	Sample cells with glass rods: 10 Nos each type, Filter - 20 Nos, O-ring: 20 Nos.	1
5.D	Surface area and pore size reference material should be supplied	1
5.E	One set of manual and service manual (both hard and soft copy in English) should be supplied with the equipment.	1
5.F	Accessories for CO_2 measurement at 273K	1
6	UV-DRS	1

	Spectrophotometer: Single Monochromator/dual grating system, Double- beam System Light source : Deuterium lamp and Tungsten-Iodine lamp or appropriate Tungsten-halogen lamp Detector : Photomultiplier tube, appropriately cooled PbS detector Wavelength range : 190 -3200 nm with an Integrating Sphere attachment for liquid, solid samples and powder sample Wavelength accuracy : ≤ ±0.3 nm (in UV-Vis range), ≤ ± 1.5nm(in NIR range) Wavelength repeatability : ≤ ±0.1 nm (in UV-Vis range), ≤± 0.2 nm(in NIR range) Resolution : 0.1 nm Mode : Abs, %T, %R Photometric range : -4 to 4 Abs or higher (UV-Vis), -3 to +3 Abs or higher (NIR) Photometric accuracy : ±0.0015 Abs Photometric repeatability : ± 0.00003 Abs or better (in the range 0-0.5 Abs)± 0.001 Abs or better (in the range 0.5-1.0 Abs) Noise level : 0.00003 Abs Baseline flatness : ± 0.0002 Abs Wavelength scan rate : minimum 0.5 nm/min Cuvette Specification : 10 mm path length 3.5 mL Quartz Cell: 10 pairs; 10 mm path length 1 ml. Quartz cell: 5 pairs; 10 mm path length 50 microlitre Quartz Cell: 2 pairs Integrating Sphere Attachment : Integrating sphere must have stirrer option Wavelength range: 200 to 2500 nm or better Integrating sphere must be easy and doable by the user Sample size needs to be mentioned and small sample volume will be preferred Special note : Samples like Powder, Solid, colloidal sample, Thin Film etc. ate planned to measured by using this instrument. Therefore, any accessory needed for different types of samples supplier should provide the details and accordingly need to quote. Calibration standards (if any) for the liquids/solids must be provided Temperature Controlled cell holder containing inlet/outlet for water and inbuild stirrer : Temperature range : 10 °C - 90 °C Refrigerated circulating water bath : To be provided Software for running the equipment : To be provided Controlling unit : To be provided Power Supply : Compatible Power Supply to be provided Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	
7	Glove Box Number of ports: Two Box Dimension and Materials: Attainable purity: < Ippm for both O_2 and H_20 Minimum Inner box dimensions: 1200 mm x 890 mm x 750 mm (LxHxD) The window materials should be impact-resistant polycarbonate (thickness is at least 10 mm). Main body must be SS304 or SS316 brushed stainless steel, at least 2.5 mm thick. Inside brushed finish and outside white color powder coating. The trays, rails and other components in the ante-chambers should also be of SS304 or SS316 of brushed stainless steel. We strongly prefer a system in which the space underneath the glove box is empty. Need a modular system that can be expanded further. The side-panels must be removable to accommodate future expansions. Height adjustable box stand with SS304 material with wheels and locking mechanism.	

	Height adjustable, anti-corrosion Stainless Steel shelves (3 numbers) mounted on rear panel Box light: Fluorescent lamp/LED The system must have at least 1 electrical feedthrough with 15 A connector that are compatible with 220 V - 240 V supply. The box should have at least 4 KF-40 feedthroughs or higher Environment: Nitrogen, Argon must be possible The leak rate (ISO compliant) should be less than 0.05 V%/hour under both Oxygen and Pressure change method. (leak rate certificate should be enclosed) Main Antechamber The glove box must have one large ante-chamber. Material SS304 stainless steel, at least 2.5 mm thick The ante-chamber should be cylindrical with a minimum diameter of 390 mm and a minimum length of 600 mm. Inside should be brushed finish Must have Stainless steel sliding tray for material transfer, minimum dimension: 570 mm x 275 mm (L x W) Aluminum anodized door 10mm thickness The chamber must have an Automatic PLC controlled evacuate and purge system with pressure gauge. Monometer may be analog/digital display, vacuum/refilled process. Door closing mechanism with spindle handle for one hand operation Mini antechamber The box must have one mini antechamber. The ante-chamber should be at least 150 mm in diameter and 400 mm in length. The ante-chamber should have a tray to enable sample transfer. The chamber must have a manual pump and purge system: with pressure gauge, manual valve and connection to vacuum pump. The antechamber should have doors that can seal the antechamber for evacuation. Vacuum manometer: Must be equipped with a 3-way valve control filling and vacuum by manual operation, Position of the ante-chamber not more than 1/3 inside and 2/3 outside. Gas purifier Main purifier valves should be of electro-Pneumatic type Single Column Gas purification system 7-inch Siemens touch screen HMI, remote and graphical PLC controller with Auto-regeneration Glove box should have at least one independent purifier capable of purifying the glove box ambient to attain a purity of <1 ppm H_2O and O_2. The removable capacity should be a minimum of 41 liters for oxygen and at least 1400 grams for moisture. Specification sheets or data sheets attesting to this must be provided. The purifier should be fully regenerable with an automatic/programmed control using forming gas. (10% H_2 or lower) or Ar or N_2. The gas circulation blower should be capable of a circulation rate of at least 100 m'/hour. The maximum and minimum circulation rates of the blower should be provided and should work without any heat exchanger. The blower speed should be dynamically controlled via program logic based on the moisture and oxygen content in the glove box, to make the blower operation power efficient. Implementation diagrams or specifications that prove this is possible must be provided. The purifier loop must have at least two H14/H13 dust filters (HEPA or ULPA filters) - one for filtering inlet gas (nitrogen or argon) and one for filtering the box ambient before it goes out to the gas circulation system. Oil bubblers should not be used in any of the gas circulation lines. The mechanism for pressure regulation should be clearly mentioned.	

	No component in the gas circulation line (except for the vacuum pumps) should use oil or oil containing parts. Eco Mode Operation Auto purge with time sequence or ppm of O_2 and H_2O Regenerable type Solvent Absorption Unit It should be capable of absorbing volatile organic solvents like DMF, THF, methanol, toluene, IPA, acetone, DMSO, acetonitrile etc. Gloves and Glove Port Covers Glove Ports: Delrin (POM) Natural white PP or Al with anti-corrosion coating. Preference will be given to Delrin (POM) Natural white/PP. The size of glove port should be at least 9" in diameter The glove ports should be O-ring scaled against the gloves. Must include at least one glove port cover. Box pressure Box pressure in the range of -15 to +15 mbar should be controllable automatically (via programmatic logic) The desired pressure should be settable via the touch panel interface. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided. A fool pedal for controlling box pressure should be provided Vacuum Pump Rotary vane pump with 17 m^3/h rate with oil mist filter and automatic gas ballast control (Pump must be from globally well-known and reputed brand like Edwards /Pfeiffer etc.) Vacuum pump capable of auto on and off when antechamber is not in use. Sensors A solid-state oxygen sensor capable of measuring oxygen levels from 0.1 ppm to 1000 ppm or higher. A solid-state moisture sensor capable of measuring moisture levels from 0.1 ppm to 1000 ppm or higher. PLC controlled operated via touch panel. Programmatic Logic Control Glove box should be controllable with independent and fully integrated Siemens programmatic logic control (PLC), with a touch panel interface The touch panel interface should serve as a central control unit for all glove box functions and procedures. Graphical display of the box pressure, O_2 and moisture levels should be available in the touch panel interface. Automatic Box purge should be possible via PLC. PLC should tigger an automatic box purge either due to high O_2 or moisture or both in the glove box or an automatic timer option to trigger box purge at a pre-set time for a pre-set duration. Continuous purging till the set point is reached Gas (argon or nitrogen) flow rate of 200 liter/min or greater during purging should be possible. The O_2 and moisture trigger set-point range for automatic box purging should be between 10-999 ppm. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided. Alarms and reminders are required for maintenance. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided. The supplier shall provide a warranty for three years for equipment.	
7.A	5 KVA UPS with 1h backup	1
7.B	l pairs of (Butyl, 04 mm thick, size L= 220 mm, anatomical with O - rings) glove	1
7.C	O-ring for glove, Mini and Main antechamber	1
7.D	6 kg activated carbon	1

7.E	Gasket Flat for the mini ante-chamber	1
7.F	UHP Grade Argon Cylinder with Gas	2
7.G	SS Argon Regulator	1
7.H	Regeneration cylinder, Regulator for Regeneration cylinder with Gas	1
7.I	Magnetic stirrer with temperature control	1
7.J	4 digit Weighing Balance	1
7.K	Swagelok Cell 2 Leads	7
7.L	Swagelok Cell 3 Leads	3
8	Electrospinning Spinning requirement: Horizontal and vertical spinning Multi polymer spinning Co-axial nozzle Single nozzle Core shell fibre fabrication Wet- Electrospinning (Compatible for water, Acetone, Methanol and other solvents) Syringe pump: Independently controlled two channel syringe pump or more than two channel syringe pumps Acceptable syringe volume: 2.5 ml-20 ml or broader range Minimum four syringe dispensing system Syringe holder made of insulating material to work under high voltage conditions Motor control through microcontroller to control and indicate flow rate Flow rate: 1 µl/min-3 ml/min (±0.05%) or better PC based control with documentation of parameters like syringe diameter, flow rate, spray duration etc. Collector: Stainless steel drums of different sizes Rotating speed: 300-4000 rpm or better Microprocessor controlled BLDC motor PC based control for speed and duration Grounding facility : Available Stationary collector dimension: 150 mm x 250 mm or better, material: stainless steel, grounding available PC based motion control of parameters like speed, traverse, motion profile and duration Power supply: High voltage power supply: 0 to 30 kV with current of 400 A or higher configuration Digital Voltmeter and Current meter Voltage output continuously adjustable from zero to maximum output Spinning chamber: Digital humidity control with both humidification and dehumidification to maintain the process conditions Cabin heating: Upto 45°C or more Digital temperature control LED cabin lighting Safety functions: Safe door, safe transparent glass windows Emergency stop button & Safely Rolay High Voltage Warning Light Isolated & Grounded Cabinet Over Current Protection Fully Sealed Cabinet Auto cut high voltage protection when door is opened Exhaust fan with HEPA filter	1

	software should be included. User friendly software that helps the regulation and control of various features like Rotating mandrel speed, Spin Duration, Syringe pump flow rate, XY target movement etc Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	
8.A	Desktop PC, 13 generation minimum is processor, 16 GB memory, 512 GB SSD, USB ports, WIFI etc.. 5 KVA UPS with lh backup	1
8.B	Standard syringes with needles (3ml and 5ml)-1 box	1
8.C	Standard spinning samples (PAN and PVDF)	1
8.D	Allen Key set	1
8.E	Screw driver set	1
8.F	Insulation pad/Foot pad	1
8.G	Teflon sheet to avoid the solution spillage	1
8.H	Spare Needles	1
8.I	Teflon Tubes	1
8.J	Tube connectors	1
9	Bomb Calorimeter Isoperibol (constant temperature bath) as per ASTM E144 Mechanism : High-strength stainless steel, removable, corrosion-resistant, safe up to 600 atm Temperature Sensor High-precision thermistor with resolution better than 0.0001°C Precision/Repeatability : ≤ 0.05 % RSD and measurement time ≤ 8 minutes after sample load and bomb set Measurement Time : ~8 minutes (variable depending on sample size & analysis cycle) Cooling Arrangement : Closed-loop water jacket with built-in chiller support Range : Up to 9000 cal/gm Sample size & Sample Type : 0.3 to 1.5 grams Temperature Resolution : 0.0001°C Calibration facility : Auto & Manual (Benzoic Acid standard) Data storage : Unlimited via PC; 5000+ results locally stored Software to be provide to control the instrument. Safety : ASTM-tested bomb, pressure relief, auto cut-off, sensor protection Diagnostic System to be provided Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	1
9.A	PC with Intel Core is or latest version processor loaded with original windows 10 or latest version OS. 8 GB DDR4 RAM (Min), USB slots, DVD Writers, LED Monitor. Monochrome Laser printer 1 KVA UPS with 30 Minutes Back Up	1
9.B	99.5% purity Oxygen gas with 47 liters cylinder comes with safety certificate for re-filling of cylinder & OEM make regulator need to supply with the system.	1
9.C	Balance with the following configuration should be interfaced with the System for direct transmission of weighing data to the PC through USB port. Capacity: 0 - 220 gm. With interfacing cable. Sensitivity: 0.0001	1

9.D	Cotton Thread Enough for 500 tests	1
9.E	Ignition wire & capsules Enough for 500 tests	1
10	High Temperature Furnace The High Temperature muffle furnace shall be a compact, high-temperature, tabletop chamber furnace suitable for research and laboratory applications including sintering of technical ceramics and thermal treatment processes. The system should be capable of reaching up to 1800°C. Tube type Muffle Furnace with gas purging 1800°C Maximum Temperature (Tmas) Working Temperature : Up to 1750°C recommended for regular operation Heating Elements : High-quality molybdenum disilicide ($MoSi_2$) Concealed heating elements are preferred Furnace Chamber Volume : Approximately 8 liters Time to Tmax : ≤ 60 minutes Thermocouple Type : Type B Housing Material : Stainless steel, dual-shell with fan cooling Power Requirement : 3-phase, 9 kW Control System : Programmable temperature controller with 50 programs and 40 segments Safety Features : Over-temperature limiter with manual reset (EN 60519-2 compliance) Controller Features: Touchscreen interface with high-contrast display Graphical program and temperature curve display Status display with estimated end time Real-time clock and USB data logging Calibration support with multiple base points Configurable for various thermal processes Multilingual support (at least 10 international languages) Protective Gas System: Gas inlet and outlet system for non-flammable protective or reaction gases Manual or automatic gas supply system including solenoid valves, flow meters, pressure gauge, etc. Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	1
11	Microwave Synthesizer Power : Microwave output power minimum 800 W or more with user defined steps (with ±1 watt increment). Control : Software-guided for full control of all reaction parameters (including pressure and temperature) and complete documentation with hard copy print out facility. Pressure control : Automated pressurization as well as pressure release and exhaust of fumes Maximum Pressure & Temperature : 20 bar or more and 250 °C or more for all vessel types. Monitoring : In-situ reaction temperature and pressure must be available along with online graphical displays of reaction parameters like pressure, power and temperature. Reaction vessel volume : 10 ml or more capacity high pressure vessels With microwave compatible materials At least 10 no of each reaction vessels of different volume must be provided Stirrer : A controlled magnetic stirring facility must be provided along with all the necessary accessories including 10 number of magnetic stirrer bars.	1

	Cooling : Suitable and controlled cooling of reaction vials after a reaction is over should also be provided Name of the original manufacturer to be mentioned clearly in the quote Catalogue of the model has to be submitted. The supplier shall provide a warranty for three years for equipment. Technical training in analyzing and troubleshooting must be provided by the qualified service engineers & application support team at On-site free of cost. The availability of the spare parts needs to be guaranteed at least upto 10 years beyond the installation date.	
11.A	1 KV UPS with a minimum backup of 1 hour.	1

Terms Condition:-

1. Parameter wise compliance should be submitted for all the items
2. All India basis users Certificate from different Govt. Customer, Engineering Institute and PSU will be preferred.
3. The supplier has to confirm supply of back up of spares for a min period of 10 years.
4. Machines should supply with operating manual, installation manual along with having testing procedure, machine BOM, electrical connection along with foundation drawing.
5. Vender should quote all the items mention in the tender otherwise bidder will not qualify for the tender.
6. Manufacturing Authorization must produce by the bidder
7. Name of the original manufacturer to be mentioned clearly in the quote
8. Catalogue of the model has to be submitted.
9. The supplier shall provide a warranty for three years for equipment.

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कुल सचिव का कार्यालय/ OFFICE OF THE REGISTRAR
नपाम::तेजपुर-784028::असम
NAPAAM::TEZPUR-784028::ASSAM

Annexure-II

List of Enclosures to be submitted with the Bid Document

Sl.	Type of Document	Submi	Page
1.	Bidders Office Address (with mobile No. and e-mail)	Yes/No	
2.	PAN Card	Yes/No	
3.	GST Certificate	Yes/No	
4.	Valid Trade License/ Registration Certificate	Yes/No	
5.	ITR Returns (Last 03 Financial Years)	Yes/No	
6.	Declaration of Non-Blacklisting	Yes/No	
7.	Acceptance to Tender Condition	Yes/No	
8.	Technical Specifications and Compliance Sheet including model supported by leaflet	Yes/No	
9.	Audited Balance Sheet certified by CA for last 03 yrs. *	Yes/No	
10.	Annual Turnover (last 03 Financial Years) *	Yes/No	
11.	Proof of Experience *	Yes/No	
12.	Earnest Money Deposit *	Yes/No	
13.	Bid Security Declaration Form*	Yes/No	
14.	MSME / NSIC (* exempted for those who are MSME registered)	Yes/No	
15.	ISO Certificates (wherever applicable)	Yes/No	
16.	Address of After Sales Support /Service Centres (wherever applicable)	Yes/No	
17.	Dealership Certificate/Authorization Certificate (wherever applicable)	Yes/No	
18.	MII Declaration (wherever applicable)		
19.	Escalation Matrix	Yes/No	
20.	Product Datasheet, User Manual and brochure in support of technical parameters	Yes/No	
21.	Certification for Genuine Pricing	Yes/No	

***N.B:** (*) denotes exemption of documents for MSME registered bidders as shown above at Sl. 14 against MSME clause.*

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Annexure-III

(To be submitted on Company's/Firm's Letterhead signed and sealed)

Bid-Security Declaration Form

Date:_____
Bid No. _____

To (insert complete name and address of the purchaser)

I/We. The undersigned, declare that:

I/We understand that, according to your conditions, bids must be supported by a Bid Security Declaration.

I/We accept that I/We may be disqualified from bidding for any contract with you for a period of three year from the date of notification if I am /We are in a breach of any obligation under the bid conditions, because I/We

(a) have withdrawn/modified/amended, impairs or derogates from the tender, my/our Bid during the period of bid validity specified in the form of Bid; or

(b) having been notified of the acceptance of our Bid by the purchaser during the period of bid validity (i) fail or reuse to execute the contract, if required, or (ii) fail or refuse to furnish the Performance Security, in accordance with the Instructions to Bidders.

I/We understand this Bid Securing Declaration shall cease to be valid if I am/we are not the successful Bidder, upon the earlier of (i) the recaeipt of your notification of the name of the successful Bidder; or (ii) thirty days after the expiration of the validity of my/our Bid.

Signed: (insert signature of person whose name and capacity are shown) in the capacity of (insert legal capacity of person signing the Bid Securing Declaration).

Name: (insert complete name of person signing he Bid Securing Declaration)
Duly authorized to sign the bid for an on behalf of: (insert complete name of Bidder) Dated on

_____day of_____(insert date of signing)

Corporate Seal (where appropriate)
(Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the bid).