



भारतीय प्रौद्योगिकी संस्थान तिरुपति

Indian Institute of Technology Tirupati

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Tender No. IITT/PHY/2020-21/243

22 March, 2021.

NOTICE INVITING TENDER FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF MULTICHANNEL ELECTROCHEMICAL WORKSTATION

(E-PROCUREMENT MODE ONLY)

Indian Institute of Technology Tirupati (IIT Tirupati) invites online bids (e-tender) in Two bid system from only eligible Class-I & Class-II suppliers only in line with Government Public Procurement order No.P-45021/2/2017-BE-II dated: 04.06.2020 for the following:

Item Description	Quantity (approx.)	Estimated Cost (Rs.)	Tender Fee (Inclusive of all taxes in Rs.)
Supply, installation, testing and commissioning Multichannel Electrochemical Workstation	01 No	43,00,000/-	1500/-
Total		43,00,000/-	1500/-

The Tender Document can be downloaded from Central Public Procurement (CPP) Portal <http://eprocure.gov.in/eprocure/app> and bid is to be submitted online only through the same portal up to the last date and time of submission of tender.

Critical Dates of Tender:

1	Date and time of Online Publication/Download of Tenders	22.03.2021	18.00 hrs
2	Bid submission start date & time	22.03.2021	18.00 hrs
3	Bid submission close date & time	12.04.2021	15.00 hrs
4	Closing date & time for submission of EMD/Tender fee	12.04.2021	15.00 hrs
5	Opening of Technical bids	14.04.2021	15.00 hrs

1. About IIT TIRUPATI:

Indian Institute of Technology Tirupati (IIT Tirupati) is an Autonomous Institute under Ministry of Education, Govt. of India.

2. Technical Specifications: Schedule of requirement

S N	Item Description	Qty
1	<p>MULTICHANNEL ELECTROCHEMICAL WORKSTATION Number of Channels required: 4 Channels (in single chassis)</p> <p>Electrochemical Impedance Spectroscopy (EIS) provision/facility should be provided in all the Four Channels including cell cables and connectors</p> <p><u>All Channels should have:</u></p> <ul style="list-style-type: none"> ➤ Compliance voltage : $\pm 12V$ or better ➤ Applied Potential range : $\pm 10V$ or more ➤ Maximum Current : ± 400 mA or more ➤ Current Ranges : $\pm 10nA$ to $\pm 1A$ or better ➤ Applied Current : $\pm 10nA$ to $\pm 400mA$ or more ➤ Voltage Resolution : $1\mu V$ or better ➤ Voltage Accuracy : $\pm 0.1\%$ of FSR or better ➤ Current Resolution : $800fA$ or better ➤ Current Accuracy (applied and measured) : $< \pm 0.1\%$ of FSR or better ➤ Potentiostat Rise/Fall time : $< 500ns$ or better ➤ Acquisition speed/ Data Sampling : 10,00,000 samples/second or better ➤ EIS Frequency range : $10\mu Hz$-7MHz or more (accuracy of atleast 1% upto 3 MHz or better) ➤ EIS contour Plot should be provided ➤ AC Amplitude : $0.5mV$ to $2V$ or better ➤ Bandwidth of electrometer : 7MHz or better ➤ Input Impedance : $1T\Omega$ or better ➤ Atleast One Channel should have 2A Current or better with Voltage of $\pm 25V$ or better. ➤ Cell connection/Electrode Configuration : 2, 3, 4 or 5 Terminal Leads (+ ground) ➤ Floating Mode and Grounding mode both should be available ➤ Analog Filtering/ hardware filtering option should be available ➤ Auxiliary inputs/outputs: 2 Analog Inputs and 1 Analog Output, 2 Digital Inputs and 1 Digital Output to control external accessories like RRDE, Temperature Probe, Temperature and Humidity Chambers, etc. ➤ Calibration of Potentiostat channel with cables should be available on-site and calibration reports must be printed as on when required. ➤ Interface: Ethernet LAN and USB 	01 No

Applications:

Supercapacitors, Batteries, Corrosion, Fuel Cell, Solar cells, Photovoltaics, etc.,

Software for Measurement, Acquisition & Analysis – Simulation for below techniques:

- Voltammetry Techniques
- Amperometry / Coulometry Techniques
- Pulsed Measurement Techniques
- Impedance Spectroscopy
- Corrosion
- Technique Builder
- Ohmic Drop Determination
- Manual Control
- Custom Applications
- Special Applications
- Solar & Photovoltaic Testing
- Battery testing /Fuel cell testing software
- Equivalent circuit fitting software
- Analysis tools for Supercapacitors, Battery, Fuel Cell, Corrosion, Photovoltaic etc..

Analysis

- MATH Linear Interpolation
- Impedance Spectroscopy Z Fit / Z Sim
- Corrosion
- General Electrochemistry
- Photovoltaic, Fuel cells
- Battery
- Electrochemical Noise Analysis Methods
- Advanced functionalities

Software's Required:

- a. Fundamental Electrochemistry – OCV, CV, LSV, Supercapacitors, Batteries, Corrosion, Fuel cell, Solar Cells, Photovoltaic testing Techniques, etc.,
- b. Voltammetry software including Cyclic Voltammetry, OCV, Linear Scan Voltammetry, AC voltammetry, etc.,
- c. Supercapacitor, Battery testing software including, constant load discharge, constant current constant power, etc.,
- d. External devices like thermal chambers / controlled atmosphere chambers controlled / synchronised by software
- e. Tools required to study on structural transformations in the electrode material and on degradation mechanisms occurring in battery components (electrodes/electrolyte).

- f. Columbic efficiency determination facility is required to estimate the lifetime of a battery.
- g. Facility required to study the phase transformations during the use of the battery.
- h. Software facility required to predict the lifetime of battery.
- i. X-Co-efficient determination facility should be provided.
- j. Fuel cell, photovoltaic testing software
- k. Corrosion software including LPR, Tafel, etc.,
- l. Impedance spectroscopy software including PEIS, GEIS, etc.,
- m. Simultaneous EIS on Working and Counter Electrode
- n. Pulse software including DPV, NPV, RNPV, SWV, etc.,
- o. Equivalent EIS circuit fitting software including the facility to add more customized circuits
- p. Analysis tools for Supercapacitor, CV, battery and fuel cell, Impedance with 2D,3D View
- q. Analysis tools for Corrosion R_p and Tafel Fit, battery CED fit
- r. Should include EIS Quality Indicators for an Impedance experiment validation
- s. Software up-gradation required at life time with free of cost.
- t. EIS measurements simultaneously on the working and on the counter electrodes.

Accessories required:

- a. Small Voltammetry cell with 7 sample vials (20 ml-10 pcs) including Cell Stand with base and one Teflon cap & purge tube 1m-- 5 nos. each
- b. Platinum counter electrode – wire – 5 cm – wire diameter 0.5 mm- OD: 6mm – 5 nos. each
- c. GCE - Glassy carbon working Electrode (OD: 6 mm – ID: 3.0 mm)- 5 nos. each
- d. PTE – Platinum working electrode (OD: 6 mm – ID: 1.6 mm) – 5 nos. each
- e. Reference electrode Ag/Agcl – length: 80 mm, OD: 6mm - 5 nos. each
- f. Calomel Reference Electrode (length: 92 mm – OD: 6mm) - 5 nos. each
- g. Battery holder for (coin cell) for cylindrical cells - 1 no.
- h. Purge tube – 5 nos.
- i. Gold working electrode - 3 mm dia - 5 nos.
- j. Electrode Polishing Kit – 1 no. with different size of alumina powder 0.5 micron, 25 micron, 50 micron and 100 micron
- k. Platinum working electrode - 6 mm - 5 nos.
- l. Small size crocodile clip for the cable (should match with the cable, Blue, Red & White colour) - 20 nos.
- m. Complete Cell Stand with accessories – 5 nos.

SPECIFICATIONS REQUIRED FOR ELECTROCHEMICAL WORK STATION-CORROSION STUDIES

- a. Accessories required: Teflon sample holder
- b. Measuring parameters: Polarization resistance (R_p), Corrosion potential (E_{corr}), Corrosion rate (I_{corr}), Current density (i), Impedance (Z), Ohmic resistance

	<p>c. Polarization measurements- 1 mV/s (-1500 mV to +1500 mV), Current range; 1 – 105 μA, Sensitivity; 1mV, Bandwidth; up to 10000 Hz</p> <p>d. Impedance measurements- Frequency- 1mHz to 100 kHz</p> <p>e. Electrode: Calomel electrode, graphite electrode, platinum electrode</p> <p><u>Data Acquisition system:</u></p> <p>Desktop (Branded PC) with i-7 Processor, 16GB RAM, 512 SSD +1 TB HD, Windows 10 OS Professional, NVIDIA dedicated Graphics Card 2 GB, wireless keyboard and mouse - 1No.</p> <p><u>Additional Accessories:</u></p> <p>Suitable UPS (1KVA or better) with Battery Backup to be supplied.</p> <p><u>Training:</u> Free training on operation, maintenance and troubleshooting should be imparted to three persons at the site of installation.</p> <p><u>Future Requirements / Attachments to be possible:</u></p> <ul style="list-style-type: none"> ➤ RRDE ➤ Conductivity Cell ➤ Spectroelectrochemistry ➤ High Current Boosters ➤ Low Current Boosters ➤ Faraday Cage ➤ Voltage Boosters ➤ Additional Channels 1 or more <p><u>INSTRUMENT SHOULD HAVE THE PROVISION FOR UPGRADATION IN FUTURE</u></p>	
	<p>Onsite Warranty : 2 years</p>	
	<p>Spares & Service Support availability: Minimum 5 years</p>	

All offered products technical Specifications and Brochures are to be submitted along with the Technical Bid.

3. TENDER FEE & BID SECURITY DECLARATION DETAILS:

3.1 Tender Fee of Rs.1500/- (Rupees fifteen hundred only) should be submitted through ECS (Bank transfer / NEFT / RTGS) in favour of Indian Institute of Technology Tirupati.

3.2 Bank A/c Details for crediting Tender Fee:

Name : Indian institute of Technology Tirupati Main Account
Bank : State Bank of India
Account No : 35523338208

IFSC Code : SBIN0006677

3.3 Tender Fee and Bid Security Exemption:

I) **Micro and Small Enterprises (MSEs):**

Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) **for goods produced and services rendered**, are exempted from Tender fee and Bid Security. However, they have to enclose **valid self-attested registration certificate(s)** along with the tender to this effect.

Accordingly, MSEs shall be required to submit **Udyam Registration Certificate** for availing benefit under MSE Procurement Policy. Enterprises registered prior to 30 June 2020 and who are not re-registered with Udyam Registration, shall continue to be valid for a period up to 31 Mar 2021. Such enterprises shall submit **EM Part-II** or **Udyog Aadhar Memorandum (UAM)** for availing aforesaid benefit.

The benefit as above to MSEs shall be available only for Goods produced and services rendered by MSEs. However, traders are excluded from the purview of MSE Procurement Policy.

II) **Startup(s):**

Startup(s) as recognized by **Department for Promotion of Industry and Internal Trade (DPIIT)**, Govt. of India, are exempted from Tender fee and Bid Security. However, they have to enclose *valid self-attested registration certificate(s)* along with the tender to this effect.

Eligible MSE and startup bidders who seeks exemption from Tender fee/Bid Security as per clause no. (c) above, if they withdraw or modify their bids during the period of validity, or if they are awarded the contract and they fail to sign the contract, or to submit a performance security before the deadline defined in the request for bids document, they will be suspended for the period of three years or as decided by the competent authority from being eligible to submit bids for contracts with the entity that invited the bids.

3.4 Other than eligible MSE and Startup bidders, Bid Security Declaration:

Bidders should have to submit the Bid Security Declaration (As per the format attached in annexure-II) in duly filled and signed condition.

3.5 The Bidders will have to upload scanned copy of Payment details towards tender fee and the same will be accepted only on verification and confirmation by the Institute.

Any delay in credit will not be entertained by the Institute. (As per the format attached in Annexure – I)

4. ELIGIBILITY CRITERIA

4.1 Other Important Documents (OIDs)

Firm Incorporation Certificate, PAN details, GST details are to be provided.

4.2. Statutory Documents:

- I) The Bidder should give self-declaration certificate for acceptance of all terms & conditions of tender documents. A duly completed certificate to this effect is to be submitted as per the Annexure-I.
- II) The firm should be neither blacklisted / debarred by any Central / State Government / Public Undertaking / Institute nor is any criminal case registered / pending against the firm or its owner / partners anywhere in India. A duly completed certificate to this effect is to be submitted as per Annexure-III.

III) Experience and Past Performance:

The bidder/OEM should have supplied similar system during past three financial years **i.e. during 2017-18 to 2019-20** in India to IITs, IISERs, IISc etc. Vendor should provide satisfactory installation certificates with product details as proof with customer contacts email and phone number as per the **Annexure-IV**.

- IV) The Annual Turnover should be at least 30% of the estimated cost **and be profitable** during each of the previous three financial years **i.e. during 2017-18 to 2019-20**. Copies of duly signed trading and profit & loss accounts / CA Certificate are to be submitted as per the **Annexure-V**.
- V) **In case the bidder is a Class-I / Class-II Local Supplier meeting the requirement of minimum 20% Local Content in line with the Public Procurement (Preference to Make in India) Order 2017 No. P-45021/2/2017-PP (BE-II) dated 04 Jun 2020 as amended from time to time. A Self-Declaration Certificate regarding “Class-I/Class-II Supplier” for the tendered items as per the Annexure-V is to be submitted.**

As per the OM of Department of Promotion for Industry and Internal Trade No. P-45021/102/2019-BE-II-Part(1) dated: 04.03.2021. The bidders can't claim themselves as Class-I local suppliers/Class-II local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc. as local value addition.

- a. 'Local Content' means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of the item procured (excluding net domestic indirect taxes) minus the value of imported content in the item (including all custom duties) as a proportion of the total value, in percent.
- b. 'Class-I local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content equal to or more than 50% as defined under this order.
- c. 'Class-II local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has minimum local content of 20% but less than 50%, as defined under this order.
- d. 'Non-local supplier' means a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%, as defined under this order.
- e. Complaint redressal mechanism: In case any complaint received by the procuring agency or the concerned Ministry/Department against the claim of a bidder regarding local content/domestic value addition in an electronic product, the same shall be referred to STQC.
- f. The bidder shall be required to furnish the necessary documentation in support of the domestic value addition claimed in an electronic product to STQC. If no information is furnished by the bidder, such laboratories may take further necessary action, to establish the bonafides of the claim.
- g. A complaint fee of Rs. 2 lakh or 1% of the value of the domestically manufactured products being procured (subject to a maximum of Rs.5 lakh), whichever is higher, to be paid by Demand Draft to be deposited with STQC. In case, the complaint is found to be incorrect, the complaint fee shall be forfeited. In case, the complaint is upheld and found to be substantially correct, deposited fee of the complainant would be refunded without any interest.
- h. False declarations will be in breach of the Code of Integrity under Rule 175 (1)(i)(h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

VI) The bidder should be OEM or OEM authorized Dealers / Channel partners / Distributors of reputed brand having authorization for sales and after sales support. Valid OEM authorization letter is required to participate in this tender.

VII) Prior Registration and / or Screening of bidders:

Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder registered with the competent authority. **The**

concerned bidder(s) are required to attach the relevant valid Registration Certificate along with the bid for consideration.

“Bidder” (including the term ‘tenderer’, consultant or service provider in certain contexts) means any person or firm or company, including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not falling in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.

“Bidder from a country which shares a land border with India” for the purpose of this Order means :-

- An entity incorporated, established or registered in such a country; or
- A subsidiary of an entity incorporated, established or registered in such a country or
- An entity substantially controlled through entities incorporated, established or registered in such a country; or
- An entity whose beneficial owner is situated in such a country; or
- An Indian (or other) agent of such an entity; or
- A natural person who is a citizen of such a country; or
- A consortium of joint venture where any member of the consortium or joint venture falls under any of the above.

The detailed terms & conditions issued from time to time in this regard by Government of India will be applicable.

VIII) **Authorized Representatives:**

Bids of bidders quoting as authorised representative of a principal manufacturer would also be considered to be qualified, provided:

- (i) Their principal manufacturer meets all the criteria above without exemption, and
- ii) The principal manufacturer furnishes a legally enforceable tender-specific authorisation assuring full guarantee and warranty obligations as per the general and special conditions of contract;
and
- iii) The bidder himself should have been associated, as authorised representative of the Principal Manufacturer for same set of services as in present bid (supply, installation, satisfactorily commissioning, after sales service as the case may be) for same or similar item for past three years ending on bid opening date.

4.3 TECHNICAL CRITERIA

Bidders should comply the specification of the tendered item in all respect. The detailed format is attached at Annexure-VII. The bidder is to complete the same in all respect and submit accordingly

5. FINANCIAL BID DETAILS

5.1 Financial bid i.e. BOQ given with tender (in **Excel format**) to be downloaded first and uploaded after filling all relevant information strictly as per the format failing which the offer is liable for rejection. Kindly quote your offer on FOR IIT Tirupati (inclusive of all taxes and charges). **Vendor should quote prices in BOQ only, offers indicating rates anywhere else shall be liable for rejection.**

5.2 IIT Tirupati is a registered institute under Department of Scientific and Industrial Research (DSIR). Vendor can quote concessional GST@5%. GST concessional Certificate will be issued by IIT Tirupati at the time of issuing purchase order.

6. TIME SCHEDULE:

S. No.	Particulars	Date	Time
a.	Date of Online Publication of Tender	22.03.2021	18.00 hrs
b.	Bid Submission Start Date	22.03.2021	18.00 hrs
c.	Bid Submission Close Date	12.04.2021	15.00 hrs
d.	Closing Date & Time for Submission of EMD & Tender Fee	12.04.2021	15.00 hrs
e.	Opening of Technical Bids	14.04.2021	15.00 hrs

7. AVAILABILITY OF TENDER

The tender document can be downloaded from <http://eprocure.gov.in/eprocure/app> and be submitted only through the same website.

8. BID VALIDITY PERIOD

The bid will remain valid for 90 days from the date of opening as prescribed by IIT Tirupati. A bid valid for a shorter period shall be rejected, being non-responsive.

9. BID SUBMISSION

9.1 Instruction to Bidder

- I) Bidders are required to enrol on the e-Procurement module of the **Central Public Procurement Portal (URL: <https://eprocure.gov.in/eprocure/app>)** by clicking on the link "**Online Bidder Enrolment**" on the CPP Portal. **The registration is completely free of charge.**

- II) Possession of a valid Class II/III DSC in the form of smart card / e-token is a prerequisite for registration and participating in the bid submission activities. DSCs can be obtained from the authorised certifying agencies recognized by CCA India (e.g. Sify/TCS/nCode/eMudhra etc).
- III) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- IV) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.
- V) The Bidders are required to log in to the site through the secured log-in by entering their respective user ID / password and the password of the DSC.
- VI) The CPP portal also has user manuals with detailed guidelines on enrolment and participation in the online bidding process. The user manuals can be downloaded for reference.

9.2 TENDER CLARIFICATION

- I) In case the bidders require any clarification regarding the tender documents, they are requested to contact our office Ph. no: 0877-2503572, Email ID: purchase@iitp.ac.in on or before due date.
- II) Technical and Specifications related Clarifications contact our office No : 08772503456, Email ID: koteswararao@iitp.ac.in on or before due date.
- III) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk.

9.3 ONLINE BID SUBMISSION PROCEDURE

Cover-1: The file should be saved in a PDF version numbered sequentially and should comprise of the following items:

Packet-1:

Duly Completed Scanned PDF copy of, PAN, GST, Firm Registration certificate and Annexure-I to VIII with relevant supporting documents

Only the relevant documents as per the tender clauses are to be uploaded along with duly completed checklist as per the annexure-IX. Uploading of other than the required documents may liable for rejection of the bid.

Cover-2:

A standard BOQ format has been provided in excel format. Bidders are required to download the BOQ excel file and fill their financial offer on the same BOQ format. After filling the same, submit it online in excel format, without changing the financial template format.

Note:

If the bid is incomplete and / or non-responsive it will be rejected during technical evaluation. The bidder may not be approached for clarifications during the technical evaluation. So, the bidders are requested to ensure that they provide all necessary details in the submitted bids.

10. BID OPENING

- 10.1 Technical Bids will be opened on **14.04.2021 @ 15.00 Hrs.**
- 10.2 Financial Bids of the eligible bidders will be opened on a later date. The date and time for opening of Financial Bids will be announced later.
- 10.3 **Bids should be summarily rejected, if tender is submitted other than through online or original tender fee/Bid security declaration are not submitted within stipulated date / time.**

11. BID EVALUATION

Based on results of the Technical evaluation IIT Tirupati evaluates the Commercial Bid of those Bidders who gets qualify in the Technical evaluation. The Commercial Bid with the lowest price will be the highest evaluated bid.

11.1 Purchase Preference

I) Micro and Small Enterprises (MSEs):

Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy issued by Department of Micro, Small and Medium Enterprises (MSME) **for goods produced and services rendered**, may be provided following purchase preference:

Item wise Quantity	Price Quoted by MSE	How the tender shall be finalized
Cannot be split	L1	Full Order on MSE
Cannot be split	Not L1 but within L1 + 15%	Full Order on MSE subject to matching L1 Price

II) Preference to Make in India

- a) In procurement goods or works which are covered under by para 3(b) of the extant Public Procurement (Preference to Make in India) Order 2017 dated 04 June 2020 and which are **divisible** in nature, the “Class-I Local Supplier”

shall get purchase preference over “Class-II Local Supplier” as well as “Non-Local Supplier” as per following procedure:

- i) **Among all qualified bids, the lowest bid will be termed as L1. If L1 is “Class-I Local Supplier”, the contract for full quantity will be awarded to L1.**
 - ii) **If L1 bid is not a “Class-I Local Supplier”, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the “Class-I Local Supplier” will be invited to match L1 price for the remaining 50% quantity subject to the Class-I Local Supplier’s quoted price falling within the margin of L1 + 20%, and contract for that quantity shall be awarded to such “Class-I Local Supplier” subject to matching the L1 price. In case such lowest eligible “Class-I Local Supplier” fails to match L1 price or accepts less than the offered quantity, the next higher “Class-I Local Supplier” within the margin of L1 + 20% shall be invited to match the L1 price for remaining quantity and so on, and contract shall be awarded accordingly. In case some quantity is still left uncovered on Class-I local suppliers, then such quantity may be ordered on the L1 bidder.**
- b) In procurement goods or works which are covered under by para 3(b) of the extant Public Procurement (Preference to Make in India) Order 2017 dated 04 June 2020 and which are **not divisible** in nature, and in procurement of services where the bid is evaluated on price alone, the “Class-I Local Supplier” shall get purchase preference over “Class-II Local Supplier” as well as “Non-Local Supplier” as per following procedure:
- i) **Among all qualified bids, the lowest bid will be termed as L1. If L1 is “Class-I Local Supplier”, the contract will be awarded to L1.**
 - ii) **If L1 is not a “Class-I Local Supplier”, the lowest bidder among the Class-I Local Supplier, will be invited to match the L1 price subject to Class-I Local Supplier’s quoted price falling within the margin of L1 + 20%, the contract shall be awarded to such Class-I Supplier subject to matching the L1 price.**
 - iii) **In case such lowest eligible Class-I Local Supplier fails to match the L1 price, the “Class-I Local Supplier” with the next higher bid within the margin of L1 + 20% shall be invited to match the L1 price and so on and contract shall be awarded accordingly. In case none of the of Class-I Local Supplier within the margin of L1 + 20%, the contract may be awarded to the L1 bidder.**
 - iv) **Class-II Local Supplier will not get purchase preference.**

12. PAYMENT TERMS

No advance payment will be made in any case. Bills in Duplicate should be sent and the payment shall be released generally within 30 days, only after it is ensured that the items / quality of the items supplied are to the entire satisfaction of IIT Tirupati and completed the entire work within the stipulated delivery schedule. If any item is found defective, or not of the desired quality etc., the same should be replaced by the firm(s) immediately for which no extra payment shall be made.

13. WARRANTY OF QUALITY AND QUANTITY

- 13.1 The awardee shall give minimum **2 years onsite warranty** on successful completion of supply, and acceptance of supplied items.
- 13.2 The awardee shall give warranty that all items are as per specification(s), conforming to the specified design and there are no defects in the process of manufacturing, packaging, transportation and delivery.
- 13.3 Upon receipt of notice from IIT Tirupati for defective material, the firm shall **within 15 days** of receipt of the notice, replace the defective material, free of cost at the destination. The firm shall take over the defective material at the time of their replacement. No claim whatsoever shall lie on IIT Tirupati for the replaced goods thereafter. If the firm fails to replace the defective goods within a reasonable period, IIT Tirupati may proceed to take such remedial actions as may be necessary, at the company's risk and expense.

14. LIQUIDATED DAMAGES

In case of delay in Supply by the stipulated date, IIT Tirupati reserves the right of imposing penalty @0.5% per week on the value of the undelivered items subject to maximum 10% of the cost of undelivered items.

15. DELIVERY SCHEDULE

- 15.1 The successful bidder should execute the order successfully i.e. Supply, Installation of ordered item within **30 days** at IIT Tirupati from the date of issue of the purchase order. In case of any damage/Broken/Expired items found, the item(s) should be replaced **within 15 days** at IIT Tirupati. The bidder has to make own arrangement for unloading and positioning of items at the desired location of IIT Tirupati.

16. PERFORMANCE SECURITY DETAILS

- 16.1 The successful tenderer will have to deposit the performance security valid for **27 Months** in the form of DD / TDR / FDR / Bank Guarantee @**03% of the total order**

value at the earliest from the date of issue of the award letter. No interest will be paid by IIT Tirupati on the deposit.

- 16.2 Performance Security will be refunded to the supplier, after it duly performs and completes the contract/warranty period in all respects.
- 16.3 Performance Security will be forfeited if the firm fails to perform/abide by any of the terms or conditions of the contract.
- 16.4 In case, the firm fails to execute the order successfully, within specified delivery period, the same goods/items will be procured from open market and the difference of cost, if any, will be recovered from Performance Security or from pending bill(s) of the defaulting firm or from both in case the recoverable amount exceeds the amount of Performance Security.

16.5 Comprehensive Annual Maintenance Contract (CAMC) Optional : CAMC charges for a period of two years should be quoted separately for the equipment which may come into force after expiry of warranty/guarantee if required.

IIT Tirupati reserves the right to conclude CAMC at appropriate time after expiry of warranty period depending upon the requirement.

Note : A separate sheet containing all AMC related details can be uploaded in pdf format.

17. TERMS AND CONDITIONS

17.1 Termination for Insolvency

- I) The IIT Tirupati may at any time terminate the Contract by giving a written notice to the awarding firm, without compensation to the firm, if the firm becomes bankrupt or otherwise insolvent as declared by the competent Court, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the department.
- II) IIT Tirupati and/or the firm are entitled to withdraw/cancel the rate contract by serving one-month notice on each other. However, once a purchase order is placed on the supplier for supply of a definite quantity in terms of the rate contract during the validity of the rate contract, that purchase order becomes a valid and binding contract.
- III) The courts of Tirupati alone will have the jurisdiction to try any matter, dispute or reference between the parties arising out of this purchase. It is specifically agreed that no court outside and other than Tirupati Court shall have jurisdiction in the matter

17.2 Force Majeure

- I) Should any force majeure circumstances arise, each of the contracting parties be excused for the non-fulfilment or for the delayed fulfilment of any of its contractual obligations, if the affected party within 15 days of its occurrence informs in a written form the other party.
- II) Force Majeure shall mean fire, flood, natural disaster or other acts such as war, turmoil, sabotage, explosions, epidemics, quarantine restriction, strikes, and lockouts i.e. beyond the control of either party.

17.3 Arbitration

- I) All disputes of any kind arising out in connection with the executing the order shall be referred by either party (IIT TIRUPATI or the bidder) after issuance of 30 days' notice in writing to the other party clearly mentioning the nature of dispute to a single arbitrator acceptable to both the parties. The venue for arbitration shall be IIT TIRUPATI India. The jurisdiction of the courts shall be Tirupati, Andhra Pradesh, India.

17.4 Other Conditions

- I) The bidder has to upload the relevant & readable files only as indicated in the tender documents. In case of any irrelevant or non-readable files, the bid may be rejected.
- II) IIT Tirupati will not be liable for any obligation or supplies made unless the Official Purchase Order has been placed by the Purchase Department.
- III) IIT Tirupati reserves the right to accept or reject any or all the tenders in part or in full or may cancel the tender, without assigning any reason thereof.
- IV) IIT Tirupati reserves the right to relax / amend / withdraw any of the terms and conditions contained in the Tender Document without assigning any reason thereof. Any inquiry after submission of the quotation will not be entertained.
- V) IIT Tirupati reserves the right to modify/change/delete/add any further terms and conditions prior to issue of purchase order.
- VI) In case the bidders/successful bidder(s) are found in breach of any condition(s) at any stage of the tender, Performance Security shall be forfeited.
- VII) False declaration/documents will be in breach of the Code of Integrity under Rule 175(1) (h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.
- VIII) Conditional tenders will not be considered in any case.
- IX) In case of doubt in material, the expenditure on testing of equipment will be borne by the tenderer.
- X) Institute reserve the right to increase/decrease the order quantity at any period of times during the validity of the contract.
- XI) **IIT Tirupati may issue amendment/corrigendum to tender documents before due date of submission of bid. Any amendment/corrigendum to the**

tender document if any, issued by IIT Tirupati will be posted on CPP Portal. For the bidders, submitting bids on downloaded tender document, it is 'bidders' responsibility to check for any amendment/corrigendum on the website of IIT Tirupati or check for the same CPP Portal before submitting their duly completed bids.

UNDERTAKING

To
The Registrar,
 Indian Institute of Technology
 Tirupati-Renigunta Road, Settipalli post,
 Tirupati 517506.

Tender No. IITT/PHY/2020-21/243 dated: 22.03.2021.

Name of the Tender/Supply : Notice Inviting Tender for Supply, installation, testing and Commissioning of Multichannel Electrochemical Workstation.

Sir,

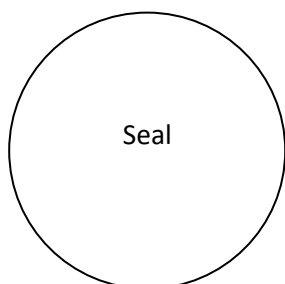
I /we hereby submit our bid for Supply, installation, testing and Commissioning of Multichannel Electrochemical Workstation.

I/ We enclosed here with the following in favor of Indian Institute of Technology Tirupati towards Tender Fee.

Particular	Amount	Payment Reference Details	Payment Date
Tender Fee (Including Tax)	1500/-		

1. I / We hereby reconfirm and declare that I / We have carefully read, understood & complying the above referred tender document including instructions, terms & conditions, scope of work, schedule of quantities and all the contents stated therein. I / We also confirm that the rates quoted by me / us are inclusive of all taxes, duties etc., applicable as on date.
2. I /we have gone through all terms and conditions of the tender document before submitting the same.

Date:
Place:



Authorized Signatory

Name:

Designation:
Contact No :

On Company Letter Head

Bid Security Declaration

To
The Registrar,
Indian Institute of Technology
Tirupati-Renigunta Road, Settipalli post,
Tirupati 517506.

Tender No. IITT/PHY/2020-21/243 dated: 22.03.2021.

Name of the Tender/Supply : Notice Inviting Tender for Supply, installation, testing and Commissioning of Multichannel Electrochemical Workstation.

Sir,

We, the undersigned declare that

1. We understood that, according to the tender conditions, bids must be supported by a Bid Security Declaration.
2. We accept that we will automatically be suspended from being eligible for bidding in any contract with the Institute for the period of **3 years** starting from the bid closing date, if we are in breach of our obligation(s) under the bid conditions, because we;
 - (a) have withdrawn our bid during the period of bid validity specified in the letter of bid; or
 - (b) having been notified of the acceptance of our bid by the institute during the period of bid validity, (i) fail or refuse to execute the contract, if required, or (ii) fail or refuse to furnish the performance security, in accordance with the tender conditions.

Date:
Place:



Authorized Signatory

Name:

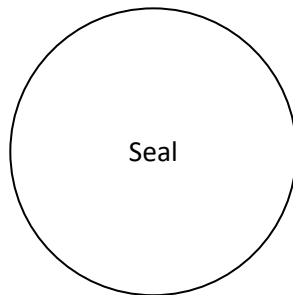
Designation:
Contact No :

**CERTIFICATE
(To be provided on letter head of the firm)**

I hereby certify that the above firm neither blacklisted / debarred by any Central/State Government/Public Undertaking/Institute nor is any criminal case registered / pending against the firm or its owner / partners anywhere in India.

I also certify that the above information is true and correct in every respect and in any case at a later date it is found that any details provided above are incorrect, any contract given to the above firm may be summarily terminated and the firm may be blacklisted.

Date:



Place:

Authorized Signatory

Name:

Designation:

Contact No.:

ANNEXURE – IV

a) Experience: (As per tender Clause No.4.2 (III))

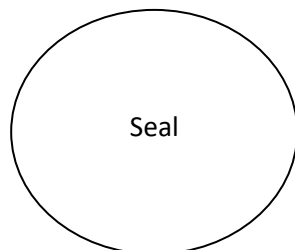
Year	Name of the Item with Specification (Technical specification brochure to be attached)	Purchase Order No. & Date (Copy of the Orders to be attached)	Date of successfully completion of SITC of ordered Item (copy of report from client to be attached)	Contact Details of Client
2017-18				
2018-19				
2019-20				

b) Past Performance: (As per tender Clause No.4.2 (III))

Year	Purchase Order No. & Date (Copy of the Orders to be attached)	Quantity	Date of successfully completion of SITC of ordered Item (copy of report from client to be attached)	Whether supplied item(s) is in successful operation for at least one year (Certificate from client to be attached)	Contact Details of Client
2017-18					
2018-19					
2019-20					

Date :

Place :



Authorized Signatory

Name:

Designation:

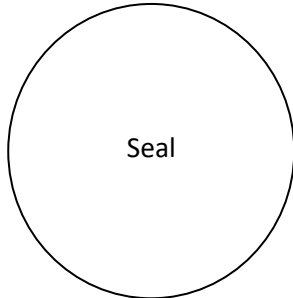
Contact No.:

ANNEXURE – V

Annual Turnover and Profit Details:

Evaluation Criteria				Remark	Specific page no. where the proof of documents are enclosed
Bidder's Annual Turnover and Profit for last three financial years	Financial Year	Turnover in Rs.	Annual Profit in Rs.	-	
	2019-20			Supporting Documents are to be attached along with the Annexure-V	
	2018-19				
	2017-18				

Date:



Place:

Authorized Signatory:

Name:

Designation:

Contact No.:

Format for Self-Declaration under preference to make in India order

In line with Government Public Procurement Order No. P-45021/2/2017-BE-II date. 15.06.2017 & P-45021/2/2017-PP (BE-II) dated: 04 June 2020. We hereby certify that we M/s. _____ (supplier name) are **CLASS-I/Class-II (Please specify clearly)** supplier meeting the requirement of local content more than 20% as defined in above orders for the material against Enquiry No. IITT/PHY/2020-21/243 dated 22.03.2021.

Details of location at which local value addition will be made as follows: (Complete address to be mentioned)

Percentage of Local Content: _____

(As per the OM of Department of Promotion for Industry and Internal Trade No. P-45021/102/2019-BE-II-Part(1) dated: 04.03.2021. The bidders can't claim themselves as Class-I local suppliers/Class-II local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc. as local value addition)

We also understand, false declarations will be in breach of the Code of Integrity under rule 175 (1) (i) (h) of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule 151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Seal and signature of Supplier

Date :

Place :

Technical Compliance statement

Description	Qty	Complied (Yes/No)	Remarks, if any	Offered Make & Model	% of Local Content as per Tender Clause No.4.2(V)	Country of Origin
<p>MULTI CHANNEL ELECTROCHEMICAL WORKSTATION Number of Channels required: 4 Channels (in single chassis)</p> <p>Electrochemical Impedance Spectroscopy (EIS) provision/facility should be provided in all the Four Channels including cell cables and connectors</p> <p><u>All Channels should have:</u></p> <ul style="list-style-type: none"> ➤ Compliance voltage : $\pm 12V$ or better ➤ Applied Potential range : $\pm 10V$ or more ➤ Maximum Current : ± 400 mA or more ➤ Current Ranges : $\pm 10nA$ to $\pm 1A$ or better ➤ Applied Current : $\pm 10nA$ to $\pm 400mA$ or more ➤ Voltage Resolution : $1\mu V$ or better ➤ Voltage Accuracy : $\pm 0.1\%$ of FSR or better ➤ Current Resolution : $800fA$ or better ➤ Current Accuracy (applied and measured) : $< \pm 0.1\%$ of FSR or better ➤ Potentiostat Rise/Fall time : $< 500ns$ or better ➤ Acquisition speed/ Data Sampling : 10,00,000 samples/second or better ➤ EIS Frequency range : $10\mu Hz$-7MHz or more (accuracy of atleast 1% upto 3 MHz or better) ➤ EIS contour Plot should be provided ➤ AC Amplitude : $0.5mV$ to $2V$ or better ➤ Bandwidth of electrometer : 7MHz or better ➤ Input Impedance : $1T\Omega$ or better ➤ Atleast One Channel should have 2A Current or better with Voltage of $\pm 25V$ or better. 	01 No					

- Cell connection/Electrode Configuration : 2, 3, 4 or 5 Terminal Leads (+ ground)
- Floating Mode and Grounding mode both should be available
- Analog Filtering/ hardware filtering option should be available
- Auxiliary inputs/outputs: 2 Analog Inputs and 1 Analog Output, 2 Digital Inputs and 1 Digital Output to control external accessories like RRDE, Temperature Probe, Temperature and Humidity Chambers, etc.
- Calibration of Potentiostat channel with cables should be available on-site and calibration reports must be printed as on when required.
- Interface: Ethernet LAN and USB

Applications:

Supercapacitors, Batteries, Corrosion, Fuel Cell, Solar cells, Photovoltaics, etc.,

Software for Measurement, Acquisition & Analysis – Simulation for below techniques:

- Voltammetry Techniques
- Amperometry / Coulometry Techniques
- Pulsed Measurement Techniques
- Impedance Spectroscopy
- Corrosion
- Technique Builder
- Ohmic Drop Determination
- Manual Control
- Custom Applications
- Special Applications
- Solar & Photovoltaic Testing
- Battery testing /Fuel cell testing software
- Equivalent circuit fitting software
- Analysis tools for Supercapacitors, Battery, Fuel Cell, Corrosion, Photovoltaic etc..

Analysis

- MATH Linear Interpolation
- Impedance Spectroscopy Z Fit / Z Sim
- Corrosion
- General Electrochemistry
- Photovoltaic, Fuel cells

- Battery
- Electrochemical Noise Analysis Methods
- Advanced functionalities

Software's Required:

- u. Fundamental Electrochemistry – OCV, CV, LSV, Supercapacitors, Batteries, Corrosion, Fuel cell, Solar Cells, Photovoltaic testing Techniques, etc.,
- v. Voltammetry software including Cyclic Voltammetry, OCV, Linear Scan Voltammetry, AC voltammetry, etc.,
- w. Supercapacitor, Battery testing software including, constant load discharge, constant current constant power, etc.,
- x. External devices like thermal chambers / controlled atmosphere chambers controlled / synchronised by software
- y. Tools required to study on structural transformations in the electrode material and on degradation mechanisms occurring in battery components (electrodes/electrolyte).
- z. Columbic efficiency determination facility is required to estimate the lifetime of a battery.
- aa. Facility required to study the phase transformations during the use of the battery.
- bb. Software facility required to predict the lifetime of battery.
- cc. X-Co-efficient determination facility should be provided.
- dd. Fuel cell, photovoltaic testing software
- ee. Corrosion software including LPR, Tafel, etc.,
- ff. Impedance spectroscopy software including PEIS, GEIS, etc.,
- gg. Simultaneous EIS on Working and Counter Electrode
- hh. Pulse software including DPV, NPV, RNPV, SWV, etc.,
- ii. Equivalent EIS circuit fitting software including the facility to add more customized circuits

- jj. Analysis tools for Supercapacitor, CV, battery and fuel cell, Impedance with 2D,3D View
- kk. Analysis tools for Corrosion Rp and Tafel Fit, battery CED fit
- ll. Should include EIS Quality Indicators for an Impedance experiment validation
- mm. Software up-gradation required at life time with free of cost.
- nn. EIS measurements simultaneously on the working and on the counter electrodes.

Accessories required:

- n. Small Voltammetry cell with 7 sample vials (20 ml-10 pcs) including Cell Stand with base and one Teflon cap & purge tube 1m-- 5 nos. each
- o. Platinum counter electrode – wire – 5 cm – wire diameter 0.5 mm- OD: 6mm – 5 nos. each
- p. GCE - Glassy carbon working Electrode (OD: 6 mm – ID: 3.0 mm)- 5 nos. each
- q. PTE – Platinum working electrode (OD: 6 mm – ID: 1.6 mm) – 5 nos. each
- r. Reference electrode Ag/Agcl – length: 80 mm, OD: 6mm - 5 nos. each
- s. Calomel Reference Electrode (length: 92 mm – OD: 6mm) - 5 nos. each
- t. Battery holder for (coin cell) for cylindrical cells - 1 no.
- u. Purge tube – 5 nos.
- v. Gold working electrode - 3 mm dia - 5 nos.
- w. Electrode Polishing Kit – 1 no. with different size of alumina powder 0.5 micron, 25 micron, 50 micron and 100 micron
- x. Platinum working electrode - 6 mm - 5 nos.
- y. Small size crocodile clip for the cable (should match with the cable, Blue, Red & White colour) - 20 nos.
- z. Complete Cell Stand with accessories – 5 nos.

SPECIFICATIONS REQUIRED FOR ELECTROCHEMICAL WORK STATION-CORROSION STUDIES

- f. Accessories required: Teflon sample holder
- g. Measuring parameters: Polarization resistance (R_p), Corrosion potential (E_{corr}), Corrosion rate (I_{corr}), Current density (i), Impedance (Z), Ohmic resistance
- h. Polarization measurements- 1 mV/s (-1500 mV to +1500 mV), Current range; 1 – 105 μ A, Sensitivity; 1mV, Bandwidth; up to 10000 Hz
- i. Impedance measurements- Frequency- 1mHz to 100 kHz
- j. Electrode: Calomel electrode, graphite electrode, platinum electrode

Data Acquisition system:

Desktop (Branded PC) with i-7 Processor, 16GB RAM, 512 SSD +1 TB HD, Windows 10 OS Professional, NVIDIA dedicated Graphics Card 2 GB, wireless keyboard and mouse - 1No.

Warranty:

2 years warranty + 2 years AMC to be quoted.

Additional Accessories:

Suitable UPS (1KVA or better) with Battery Backup to be supplied.

Training: Free training on operation, maintenance and troubleshooting should be imparted to three persons at the site of installation.

User List: The product must be installed and used in premier research institutions such as IITs, IISERs and IISc. The details of those users and customer satisfaction certificate must be provided.

Future Requirements / Attachments to be possible:

- RRDE
- Conductivity Cell
- Spectroelectrochemistry
- High Current Boosters
- Low Current Boosters
- Faraday Cage

<ul style="list-style-type: none"> ➤ Voltage Boosters ➤ Additional Channels 1 or more <p><u>INSTRUMENT SHOULD HAVE THE PROVISION FOR UPGRADATION IN FUTURE</u></p>						
<p>Onsite Warranty: Two years onsite warranty.</p>						
<p>Spares & Service support availability: Minimum 05 years</p>						

COMPANY DETAILS

Name of the bidder		
Date of Incorporation /		
PAN Number		
GST Registration Number		
Bidder's Bidding Capacity for the tendered items (As a Manufacturer/ Trader/ dealer / channel partner / system integrator, etc.)		
Bank Details	Account Number	
	IFS Code	
	Bank Name	
	Branch Name	
Registered Office Address		
Authorized Signatory Details (Company/Firm Authorization by the competent authority, to be attached)	Name	
	Designation	
	Email	
	Phone	
Details of Contact other than Authorized Signatory	Name	
	Designation	
	Email	
	Phone	

Date:

Signature and Seal of the Tenderer:

Place:

Name in Block Letter:

Designation:

Contact no.

CHECKLIST FOR BIDDERS TO BE SUBMITTED IN DULY FILLED AND SIGNED

Tender Clause No.	Name of the Document	Document Particulars	Submitted (Yes/No)	Page No. of the attached Document
3.1	Tender Fee			
3.4	Bid security Declaration (Annexure-II)			
3.3	Valid Tender Fee / EMD Exemption Certificate			
4.1.	PAN Card			
	Incorporation/Registration certificate of company			
	GST Registration copy			
4.2.(I)	Tender acceptance letter (Annexure I)			
4.2.(II)	Non-Blacklisting undertaking (Annexure III)			
4.2.(III)	The bidder/OEM should have supplied similar system during past three financial years i.e. during 2017-18 to 2019-20 in India to IITs, IISERs, IISc etc. Vendor should provide satisfactory installation certificates with product details as proof with customer contacts email and phone number as per the Annexure-IV .			
4.2.(IV)	The Annual Turnover should be at least 30% of the estimated cost and be profitable during each of the previous three financial years i.e. during 2017-18 to 2019-20 . Copies of duly signed trading and profit & loss accounts / CA Certificate are to be submitted as per the Annexure-V .			
4.2.(V)	The bidder should be a <u>Class-I/Class-II Local Supplier</u> meeting the requirement of minimum <u>20% Local Content</u> in line with the Public Procurement (Preference to Make in India) Order 2017 No. P-45021/2/2017-PP (BE-II) dated 04 Jun 2020. A Self-Declaration Certificate regarding “Class-I & Class-II Supplier” for the tendered items as per the Annexure-VI is to be submitted.			
4.2.(VI)	The bidder should be OEM or OEM authorized Dealers / Channel partners / Distributors of reputed brand having authorization for sales and after sales support. Valid OEM authorization letter is required to participate in this tender.			
4.2.(VII)	Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder registered with the competent authority. The concerned bidder(s) are required to attach the relevant valid Registration Certificate along with the bid for consideration.			
4.3	Technical Compliance Statement : Annexure-VII.			
11.1 (I)	Purchase Preference: (if applicable) Micro and Small Enterprises (MSEs):			

11.2 (II)	Purchase Preference: Make in India			
12	Payment Term: Within 30 days after SITC.			
13.	Warranty: 2 years onsite warranty			
15	Delivery: FOR IIT Tirupati within 30 days			
8	Bid validity: 90 days from the date of opening of the tender			
	Company details : Annexure-VIII			
	CAMC Details			

Note: Submission of tender without the above mentioned documents will lead to rejection/disqualification of the tender.

Signature of the bidder with stamp