

**Request for Quote for the procurement of
a multichannel electrochemical workstation (Last date: 19 April 2022)**

This is a Request for Quote (RFQ) for the procurement of a multichannel electrochemical workstation, for the Centre for Nano Science and Engineering (CeNSE) at the Indian Institute of Science (IISc), Bangalore. IISc is India's best institution on higher learning and the Center for Nano Science and Engineering (CeNSE) is home to one of the best academic fabs in the world.

CeNSE is a multidisciplinary research department at IISc that houses a 14,000 sq. ft. cleanroom and characterization facility used by 50 faculty members from various disciplines at IISc. CeNSE is also a user- facility which has hosted over 6000 participants from more than 700 universities and institutes all over the world. Consequently, any tool in CeNSE receives significant exposure to scientific community in India and beyond. The vendors are requested to factor in the value of this exposure in their quotes.

Being a user-facility puts additional technical burden on the tool. We need a tool that can tolerate heavy usage (40 hours/week), has a high uptime, can be serviced, and maintained for the foreseeable future (at least 5 years), and has a track record of reliability at comparable facilities in India and abroad. Details of existing facilities and the user program can be gleaned from:

<http://nnfc.cense.iisc.ac.in>

<http://www.mncf.cense.iisc.ac.in/>

<https://www.inup.cense.iisc.ac.in/>

Procedure:

1. Vendors will be required to submit a technical proposal and a commercial proposal in **two separate sealed envelopes**. The technical bid should contain all commercial terms and conditions, except the price. **Only vendors who will be adjudged by the committee to meet the technical requirements will be considered for the commercial negotiation.**
2. **The deadline for submission of proposals is the April 19, 2022, 5:00 pm Indian Standard Time.** Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, on or before the above deadline.
3. C.I.P. Bangalore basis (by Air Freight only). The quotation should mention the terms of delivery, delivery schedule, estimated delivery date, and payment terms.
4. The decision made by the purchase committee is final.
5. **The technical bid** must contain a point-by-point technical compliance document.
 - a. The technical proposal should contain a compliance table with 5 columns.
 - First column must list the technical requirements, in the order that they are given in the technical requirements below.

- The second column must provide specification of the instrument against the requirement (please provide quantitative responses wherever possible)
 - The third column should describe the compliance with a “YES” or “NO” only. Ensure that the entries in the column 2 and column 3 are consistent.
 - The fourth column should clearly state the **reasons/explanations/context** for deviations if any. Without clear explanation, just stating YES” or “NO” will not be considered.
 - The fifth column may contain additional remarks. It can be used to highlight the technical features, qualify response of previous columns, or provide additional details.
- b. Technical capabilities of any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
 - c. Vendors are encouraged to highlight the advantages of their tools over comparable tools from the competitors
 - d. Relevant technical datasheets should be provided. The committee reserves the right to cross-check the information in these datasheets with publicly available information.
 - e. Items in addition to that listed in the technical table that the vendor would like to bring to the attention, such as data sheets, technical plots etc. can be listed at the end of the compliance table. Vendors are also encouraged to highlight the advantage of their tools over comparable tools from the competitors.
 - f. If multiple systems can fulfil the requirements, vendors can submit multiple bids.
6. The technical proposal will be evaluated against the technical requirement. Deviations from the technical specifications requested are allowed. Such deviations must be highlighted and justified. Their acceptance or rejection will be left to the discretion of the technical committee. Only the vendors, adjudged by the committee to be suitable to meet the technical requirements, will be considered for the commercial negotiation.
7. The commercial bid must contain:
- a. Itemized cost of the system and *required* accessories, such as software, power supply, etc.
 - b. All accessories needed for the instrument to function as per the technical specification must be listed.
 - c. itemized cost, as an option, for any *suggested* accessories/add-ons that may enhance the usability, capability, accuracy or reliability of the tool. Vendors are encouraged to quote for as many add-ons as their tool portfolio permits.
 - d. The cost of shipping plus insurance up to IISc has to be included. IISc will help the shipping company to take care of the customs clearance at Bangalore Airport.
 - e. Please indicate the warranty provided with the tool. Warranty of 3 years or more is preferred.
 - f. Provide itemized cost for *required/expected* spares for 3 years of operation. For sake of this calculation, the vendor may assume active tool usage of 40

- hours/week. This number will be used to estimate the life cycle cost of the tool.
- g. The cost of annual maintenance contract (AMC). The details of AMC are given below. This number will be used to estimate the life cycle cost of the tool.
 - h. Length of time that the tools will be supported with service and spares from the date of installation. Our requirement is that the tools be supported for at least 5 years from the date of installation. To quote lowest price, vendors often quote for obsolete or soon-to-be obsolete equipment. This is NOT acceptable. For a user-facility like CeNSE, it is vital that the equipment be serviceable and supported for the foreseeable future. The length of guaranteed support will be used to estimate the life cycles cost of the tool.
 - i. The commercial bid should indicate the following separately: (a) equipment price (b) optional items (c) Freight and insurance cost (d) Shipping cost and (e) the Total cost.
8. As an additional option, provide cost of an annual maintenance contract (AMC) for 3 years, post warranty. The AMC must
- a. cover 1 scheduled and 1 emergency visit per year.
 - b. The emergency visit should be supported with a 48-hour response window.
 - c. clarify if maintenance will be done by a trained onsite engineer (CeNSE employee) or a specialist from the OEM.
 - d. in case the OEM is foreign, clarify if maintenance will be done by a trained engineer from India (local representative or Indian subsidiary) or by a trained engineer from abroad.
 - e. include an itemized list of spares (e.g., maintenance kits) that are essential for scheduled visits.
9. The commercial bids will be evaluated based on life-cycle cost of the tool. This includes the cost of purchase, maintenance, spares, etc. The final decision will be me made by the committee.
10. The RFQ must include references of 5 previous installations with similar requirements, preferably in India. Please provide the names and contact addresses of the referees, so that the committee can contact them independently. Details of such systems with model numbers and users should be provided.

All the proposals should be addressed to:

The Chairperson,
Attn: Dr. Sreetosh Goswami
Centre for Nano Science and Engineering
Indian Institute of Science
Bangalore – 560012, India

The Proposals should arrive at the Main office, GF-15, Centre for Nano Science and Engineering, Indian Institute of Science, Bangalore 560012, India, on or before the deadline of April 19, 2022, 5:00 pm Indian Standard Time. The parcels should be delivered between 9 am to 5 pm.

Questions regarding this tender should be addressed to Dr. Sreetosh Goswami at the email address sreetosh@iisc.ac.in with the subject line “Query _Tool name_Bidder’s name”.

Post such submission all vendors should send an email to sreetosh@iisc.ac.in with the subject line: “Submitted bid_Bidder’s name_Tool Name” to intimate him of the submission within one day.

II. General terms and conditions:

1. The institute reserves the right to accept or reject any bid, or to annul the bidding process and reject all bids, at any time prior to the award of contract without thereby incurring any liability of the affected bidder or bidders.
2. Previous installations can be used by the committee to disqualify vendors with poor track record of service, build quality, system performance or poor availability of spares.
3. The bidder must not be blacklisted/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
4. The vendor should be able to repair and maintain the equipment once it is installed. Clarify if periodic (preventive) maintenance can be done by a trained on-site engineer (i.e. IISc employee) or requires a specialist from the OEM. The bidder should have qualified technical service personnel for the equipment based in India and must assure a response time if <24 hours after receiving a service request.
5. All the quotations must be valid for at least 120 days at the time of submission.
6. The quotations should clearly indicate the terms of delivery, delivery schedule, tax, and payment terms.
7. In case of the award of purchase order, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
8. The lead-time for the delivery of the equipment should not be more than 3 months from the date of receipt of our purchase order.
9. The bidder is responsible for the installation of the equipment in the IISc campus.
10. Necessary training to operate the procured setup and required literature support (in English language) should be provided without additional cost.
11. Bidders should undertake to support the system with spares and software bugfixes, if any, at least for the next 5 years.
12. Data must be supplied along with the technical compliance documents. Technical bids without supporting data can be deemed as technically non-compliant.
13. Printed literature and published papers in support of all compliance to the prescribed specifications are encouraged.

14. All guaranteed specifications will have to be demonstrated, upon request, in an active installation. Failure to demonstrate any promised specifications will be deemed as technical non-compliance.
15. Technical evaluation by the institute must include demonstration to verify functionalities and capabilities of the system quoted. Any discrepancy between the promised specifications and demonstrated specifications will be deemed as technical non-compliance. If need arises, the vendor must be ready to physically visit IISc for a techno commercial discussion.
16. The intender reserves the right to withhold the placement of the final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all the above conditions without assigning any reason.

III. Technical specifications of multichannel electrochemical workstation:

A multichannel electrochemical workstation with the following technical specs is required. The committee will decide on the suitability of the proposals to meet our requirements.

Multichannel Electrochemical Workstation

Multichannel Electrochemical Workstation should have built-in EIS analyzer designed for Sensors, Corrosion, Super Capacitor Applications, Battery & Electrochemical research over a broad spectrum of applications.

It Should have one channel with further upgradation capability of at least nine or more channels in the same chassis.

The system should be capable of performing RDE/RRDE Measurements by adding additional channels. All channels should operate simultaneously, independently, and as a Bi-Potentiostat mode.

The Workstation should be capable of performing two, three, and four-electrode measurements.

Technical Specifications

Applied & Measured Current range should lie in the range of $\pm 5\text{nA}$ to $\pm 2\text{A}$ or higher without any booster.

Current Resolution: 130fA or better

Compliance Voltage: $\pm 12\text{V}$ or higher

Applied & Measured Voltage: $\pm 10\text{V}$ or better

Applied Potential Resolution $\leq 310\text{ nV}$ (typical for $\pm 10\text{ mV}$ signal)

Measured Potential Resolution $\pm 6\mu\text{V}$ or better

Voltage & Current Accuracy: $\pm 0.2\%$ of FSR or better

EIS Frequency range: 10 μHz -1MHz or better

Input Impedance: 10^{12} or better

Potentiostat Rise/Fall time: <500ns or better

Electrometer Bandwidth ≥ 10 MHz or better

Minimum Time Base: 2 μs

Minimum Potential Step: 1 μV or better

Maximum Scan Rate 12500 Vs-1

Comprehensive software to be provided with the system with lifetime license, fully 32-bit/ 64 bit Windows based platform, Preferably with USB or Ethernet controlled system.

Techniques:

Software should be capable of supporting a wide variety of electrochemical techniques as mentioned below:

Open Circuit, Linear Scan Voltammetry, Cyclic Voltammetry Multiple Cycles, Chronoamperometry ,Chronopotentiometry ,Chronocoulometry, Square Wave Voltammetry ,Differential Pulse Voltammetry, Normal Pulse Voltammetry , Reverse Normal Pulse Voltammetry, Galvanic Corrosion , Cyclic Polarization, Linear Polarization, Tafel, Potentiostatic, Potentiodynamic , Galvanostatic, Galvanodynamic ,Constant Current ,Constant Potential, Constant Power , Charge-Discharge, CC-CV, GITT ,PITT , Potentiostatic EIS ,Galvanostatic EIS ,Mott – Schottky etc

Equivalent Fitting analysis software for Impedance Analysis needs to be provided.

Accessories

The following list of accessories should at least be included. Further suggestions are welcome.

1. Low Volume Voltammetry cell ~ 15ml -1 No with following accessories:
 - a. Purging Accessories
 - b. Ag/AgCl Reference & Pt Counter Electrode

- c. Ag/AgCl filling solution
 - d. The replacement Frits
 - e. Cell Stand
2. Ag/AgCl Reference Electrode– 1 No
 3. Platinum disk working Electrode 2mm diameter– 3 Nos
 4. Glassy carbon disk working Electrode 2 mm diameter– 3 Nos
 5. Electrode Polishing Kit with Alumina and diamond powder with all accessories- 1 No

Thanking you,

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