



# NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

## Single Tender Enquiry

**Department: Ceramic Engineering**

**Tender Notice No: NITR/PW/CR/2021/246**

**Date: 23/02/2021**

**To,**

**M/S Metrohm India Private Limited,**  
At: Metrohm Siri Towers, 3 & 4 Fourtts Avenue,  
Annai Indira Nagar, Thoraipakkam,  
Chennai-600096

**LoginId: [anuran@metrohm.in](mailto:anuran@metrohm.in)**

**Bidding Through**

**CPP Portal**

**<https://eprocure.gov.in/eprocure/app>**

### Important Dates

Event	Date	Time
Pre-bid Conference	NA	NA
Last Date of submission of Bid	<b>01/03/2021</b>	<b>03:00 PM</b>
Date of opening of Techno-commercial & Financial Bid	<b>02/03/2021</b>	<b>03:00 PM</b>

Dear Sir,

We intend to purchase the commodities specified below and invite quotations in accordance with the terms and conditions detailed in the bid document. If you are interested, kindly send your offer with prices and complete terms within the time mentioned above.

For any clarification:

Yours sincerely,

**Attention.**

**Prof. Shantanu Kumar Behera**  
**Department of Ceramic Engineering**  
**National Institute of Technology**  
**Rourkela-769008, Odisha**  
**Email: [beherash@nitrrkl.ac.in](mailto:beherash@nitrrkl.ac.in)**  
**Phone: 0661 2462214**

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**Prof. Shantanu Kumar Behera**  
**Associate Professor**  
**Department of Ceramic Engineering**

**Encl:**

- 1) Schedule of requirement, specifications, dates etc.**
- 2) Bid document containing detail terms and conditions.**

## 1. Schedule of requirements

Sl. No.	Description of Goods/Service	Quantity
1	Multichannel Electrochemical Workstation	1(One)
2	Electrochemical Impedance Spectroscopy	1(One)
3	Bipotentiostat	1(One)
4	Current Booster	1(One)
5	Electrochemical Cells	1(One)
6	Electrical Accessories	1(One)

## 2. Specifications and allied Technical Details

For detailed specification see Annexure II

## 3. Format of Quotation

☒ It is a one-part bid with separate techno-commercial and price bids.

4. The Bid should be submitted through <https://eprocure.gov.in/eprocure/app>

5. Quotations should be valid for a period of **90 days** from the date of opening of techno-commercial bid.

## 6. Some important dates:

i.	Pre-bid Conference:	Date: <b>NA</b>	Time: <b>NA</b>
ii.	Last date for submission of bid :	Date: <b>01/03/2021</b>	Time: <b>03:00 PM</b>
iii.	Opening date of techno-commercial bid & Financial Bid:	Date: <b>02/03/2021</b>	Time: <b>03:00 PM</b>

7. **Warranty:** Warranty must be **1 year** onsite which should be clearly mentioned along with the quotation.

8. **GST:** GST should be charge according to applicable rates.

9. **Tender Cost:** Tender cost (Non-refundable) in the shape of Demand Draft (DD) for **INR 500/- (Rupees Five Hundred Only)** in favour of "**Director, NIT Rourkela**" payable at Rourkela from any Scheduled Commercial Bank except Co-operative and Gramin Bank. Tender cost should reach physically through **Speed post/ Registrar post / Courier**, containing in an envelope & superscripted with subject, tender reference number addressing to **Registrar, NIT Rourkela -769008, Odisha**; on or before **02/03/2021 at 03:00 PM**, failing which the bid will be summarily rejected.

10. **Bid Security:** It is mandatory to submit the "**Bid Security declaration**" form as mentioned in **Annexure I**, failing which the bid will be summarily rejected.

**11. Performance Security: 3 % of the contract value** should be deposited to the Institute within 15 days from the date of issue of Purchase Order, in shape of Demand Draft (DD)/Bank Guarantee in favor of "Director, NIT Rourkela and payable at Rourkela" from any Scheduled Commercial Bank except Co-operative and Gramin bank. And Performance security should remain valid for a period of 60 days beyond the date of completion of all contractual obligations of the suppliers including warranty obligation.

**12.** Please go through the enclosed "bid document" carefully for other bidding instructions.

**13.** Please send your quotation through <https://eprocure.gov.in/eprocure/app>

**14. A. Technical Evaluation Criteria:**

- i. If the supplier is Original Equipment Manufacturer (OEM) should have own service center in India. The bidders must enclose details of their infrastructure with reference to locations and technical manpower, availability of inventory spares etc. A valid GST registration certificate of OEM should be submitted along with bid.
- ii. Scanned copies of the technical brochure of the above equipment and accessories (**Annexure-II**) given in the quotation must be included in the technical bid.
- iii. Design and schematic diagram of the equipment should be provided for better understanding.
- iv. Point wise technical compliance along with any deviation of the mentioned specifications (**Annexure-II**) must be indicated along with technical documents.
- v. Make and model no. should be mentioned in the technical bid.

**B. Financial Bid Evaluation Criteria:**

Final Price comparison for the award of contract to decide Lowest price (L1) will be made based on overall price quoted in BOQ.

**15.** For technical details, you may contact

<p><b>Prof. Shantanu Kumar Behera</b> <b>Department of Ceramic Engineering</b> <b>National Institute of Technology</b> <b>Rourkela-769008, Odisha</b> <b>Email: <a href="mailto:beherash@nitrkl.ac.in">beherash@nitrkl.ac.in</a></b> <b>Phone: 0661 2462214</b></p>
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**NB: Please furnish your Dealership Certificate (must) and Proprietary Nature Certificate (If applicable)**

**BID SECURITY DECLARATION**

Tender Ref. No.: \_\_\_\_\_ Dated \_\_\_\_\_

Tender ID : \_\_\_\_\_

To

**The Registrar,  
National Institute of Technology, Rourkela  
Sundargarh, Odisha-769008**

The undersigned, declare that I/We understand that, according to your conditions, bids must be supported by a Bid Securing Declaration. I/We accept that I/We may be disqualified/ suspended from bidding for any tender /contract in your Institute (NIT Rourkela) for a period of **Five Years** from the date of notification of present tender, if I am /We are in a breach of any obligation under the bid conditions as under, if I/We

- a) Withdraw/modify/amend, impair or derogate the tender/bids, 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 refuse 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 receipt 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 the Bid Securing Declaration) Duly authorized to sign the bid for and 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)



# NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA – 769 008, ODISHA

## **BID DOCUMENT**

### **1. Instructions to the bidders**

- 1.1 Bids are invited on behalf of the Director, National Institute of Technology (NIT), Rourkela– 769008, Odisha, from the intending bidders for supply of the goods/stores/equipment for the Institute as detailed in the enquiry letter.
- 1.2 The bidders should quote their offer/rates in **BOQ** in clear terms without ambiguity.
- 1.3 In Case of any discrepancy between the rate in figures and that in words, the rate in words will be accepted as correct.
- 1.4 The last date for receipt of the bid is marked in the tender document.
- 1.5 The bids should be uploaded in <https://eprocure.gov.in/eprocure/app>. Please follow the guidelines of the site.
- 1.6 If a prospective bidder requires any clarification in regard to the bidding documents, s/he may make a request the concerned officer or faculty member at least 15 days before the deadline for receipt of bids.
- 1.7 Bid received after deadline of receipt indicated in para 1.4 above, shall not be taken in to consideration.
- 1.8 Each bidder shall submit only one bid. A bidder, who submits more than one bid, shall be disqualified and considered non-responsive.
- 1.9 (In respect of high value plant, machinery etc. of a complex and technical nature). The bids may be submitted in one part, viz., techno-commercial bid and financial bid.
- 1.10 The bidder has to sign in full at all pages of the scanned part of the bidding document. No over- writing in those pages is acceptable.
- 1.11 If any bidder does not fulfil technical specification, his/her eligibility will be cancelled even if his/her price got L1 status.
- 1.12 Bidders registered with any of the following agencies/ bodies as per Public procurement policy for Micro & Small Enterprises (MSE) order 2012 are exempted categories from payment of EMD & Tender cost provided that the registration Certificate issued by any one of these below mentioned agencies must be valid as on close date of tender. Micro small or medium enterprises who have applied for registration or renewal of registration with any of these agencies/bodies but have not obtained the valid Certificate as on close date of tender are not eligible for exemption.
  - i) Khadi and Village Industries Commission (KVIC)
  - ii) National Small Industries Corporation (NSIC)
  - iii) Any other body specified by Ministry of MSME/GOI

### **2. Conditions of the bid**

- 2.1 The rates quoted should preferably be net, inclusive of packing, forwarding, freight, Insurance and all other incidental charges including taxes. In case these charges are quoted extra in addition to the quoted rates, the amount thereof or ad-valorem rate must be specified. Packing,

forwarding, freight, etc., when quotes separately are reimbursable at actuals. If external agencies are employed, their receipts must be enclosed with the invoice.

- 2.2 Duties and Taxes are to be quoted separately. Ad-valorem rates thereof should be clearly indicated with reference to the relevant Acts and Rules.

**It may be noted that the Institute is availing custom duty exemption in terms of Notification No. 51/96 – Customs dt. 23.07.1996, Notification No. - 47/2017- Integrated Tax (Rate) dt. 14.11.2017 and Notification No- 45/2017 – Integrated tax (Rate) dt. 14/11/2017 & Notification No. - 45/2017- Central tax (Rate) dt. 14.11.2017, Notification No. - 45/2017- Union Territory Tax (Rate) dt. 14/11/2017 [Vide DSIR, Ministry of Science and Technology, Government of India, Registration No.: TU/V/RG- CDE (227)/2016, dated: 13.11.2018]**

- 2.3 The goods are required to be delivered at the indenting Department of NIT, Rourkela, and must be reached within **60 days** from the date of placement of the supply of order under the risk and arrangement of the bidder and offers with delivery beyond the above period shall be treated as unresponsive. In case the delivery time is higher, the same must be mentioned clearly in the quotation.
- 2.4 The bid should remain valid for a period of **90 days** from the date of opening. In case your offer has a different validity period that should be clearly mentioned in the quotation.
- 2.5 Conditional discount, if any, offered by the bidder shall not be considered at the time of evaluation.
- 2.6 The goods offered should strictly conform to the specification and technical details as mentioned in schedule of requirements in the tender documents.
- 2.7 The Institute may like to conduct pre-dispatch inspection of goods, where applicable.
- 2.8 Period of guarantee/warranty, where applicable, should be specified in the bid.
- 2.9 If the successful bidder, on receipt of the supply order, fails to execute the order within the stipulated period, in full or part, it will be open to the Director, NIT, Rourkela to recover liquidated damage from the firm at the rate of 1 percent of the value of undelivered goods per month or part thereof, subject to a maximum of 5 percent of the value of undelivered goods. Alternatively, it will also be opened to the Director, to arrange procurement of the required goods from any other source at the risk and expenses of the bidder.
- 2.10 The successful bidder may be required to execute a contract, where applicable.
- 2.11 The bidder has to furnish up to date GST and Income Tax Clearance Certificate along with the bid.
- 2.12 Purchase order / Work order shall be placed on the bidding firm(s). In case of deviation to this, if any, the bidding firm should produce any such sufficient documents/credentials i.e, Agreements, MOUs, Arrangements etc. with the third party/ OEM to satisfy the buyer. A consent letter from the third party/ OEM to that effect must be enclosed along with the bidding documents.
- 2.13 Payment (*100 percent*) will be made by Account Payee Cheque/Bank Draft, within 30 days from the date of receipt of the goods in good condition or receipt of the bill, commissioning of the equipment, where applicable, whichever is later/latest.
- 2.14 State Bank of India is the sole Banking partner for NIT Rourkela for operation of LC (Letter of Credit).
- 2.15 In the event of any dispute arising out of the bid or from the resultant contract, the decision of the Director, NIT, and Rourkela shall be final.
- 2.16 The bid document/resultant contract will be interpreted under Indian Laws.

### **Technical specifications for Multichannel Electrochemical Workstation**

The multichannel electrochemical workstation must be capable of performing electrochemical research and characterization of materials used in batteries, supercapacitors, catalysts, solar cells, and photovoltaics. The procured workstation must possess the following attributes.

Parts	Specifications
1	<p><b>A dual channel electrochemical workstation with each channel functioning completely independent of the other, with each channel having the ability to characterize the following:</b></p> <p>1) Open Circuit, 2) Linear Scan Voltammetry, 3) Cyclic Voltammetry (Single), 4) Cyclic Voltammetry (Multiple Cycles), 5) Staircase Linear Scan Voltammetry, 6) Staircase Cyclic Voltammetry, 7) Staircase Cyclic Voltammetry (Multiple Cycles), 8) Multi-Vortex Scan, 9) Chronocoulometry, 10) Chronoamperometry, 11) Chronopotentiometry, 12) Recurrent Potential Pulses, 13) Recurrent Galvanic Pulses, 14) Linear Polarization Resistance (LPR), 15) Tafel, 16) Potentiodynamic, 17) Cyclic Polarization, 18) Potentiostatic, 19) Galvanic Corrosion, 20) Galvanostatic, 21) EN, 22) Split LPR, 23) Galvanic Control LPR, 24) Galvanodynamic, 25) Zero Resistance Ammeter (ZRA), 26) Potentiostatic EIS, 27) Galvanostatic EIS, 28) Mott-Schottky, 29) Constant Potential, 30) Constant Current, 31) GITT, 32) PITT, 33) Charge-Discharge.</p> <p>Compliance Voltage: <math>\pm 12\text{V}</math> or better. Adjustable compliance voltage configurations will not be considered. Compliance voltage add-ons or modules must be quoted separately.</p> <p>Current Compliance: <math>\pm 350\text{ mA}</math> or better Applied</p> <p>Potential range: <math>\pm 10\text{ V}</math> or better</p> <p>Current Ranges: <math>\pm 10\text{ nA}</math> to <math>\pm 100\text{ mA}</math> in minimum multiple ranges or better. Applied</p> <p>Current: <math>\pm 350\text{ mA}</math> or better</p> <p>Measured Voltage Resolution: <math>5\mu\text{V}</math> or better</p> <p>Applied Voltage Accuracy: <math>\pm 0.2\%</math> of value or better</p> <p>Applied Current Resolution: <math>0.02\%</math> of current range or better Current</p> <p>Accuracy: <b>0.2%</b> at entire current range or better Rise/Fall time: <math>&lt; 500\text{ ns}</math> or lower</p> <p>Measured current resolution: <math>0.001\%</math> or better</p> <p>Acquisition speed/ Data Sampling: <math>50,000\text{ samples/second}</math> or better</p> <p>Auxiliary inputs/ outputs: 2 Analog Inputs and 1 Analog Output, 2 Digital Inputs and 1 Digital Output for both channels</p> <p>Maximum Scan Rate: <math>300\text{ V/s}</math> or better</p> <p>Electrometer Bandwidth: greater than <math>4\text{MHz}</math> or better Input</p> <p>Impedance: <math>50\text{G}\Omega</math> or better</p> <p>Bias/Leakage Current: <math>&lt; 10\text{ pA}</math> or better Measured Voltage Range: <math>\pm 10\text{V}</math></p> <p><b>Safety:</b></p> <p>The safety of unit/workstation must be ensured under all circumstances and the system shall be fail safe. The system must have its own inherent warning system during emergency related to power failure or other external factor.</p> <p><b>Software for Data Acquisition/Analysis:</b></p> <p>A suitable licensed software should be available for Data acquisition and analysis. Additional two copies of licensed software (CD-ROM)/<b>Flash drive</b> should be provided. The software must be downloadable to unlimited computers &amp; fully windows based.</p>

	<p><b>Software capability:</b> Software should be capable of supporting a wide variety of electrochemical techniques as mentioned below:</p> <p>OCV, CV, LSV GEIS, PEIS –Electrochemical Impedance Spectroscopy Technique should be available with Equivalent EIS fitting circuit analysis. Analysis tools for CV, Battery, Corrosion–Rp and Tafel Fit, Solar IV- FF, Efficiency should be available.</p> <p>Battery Techniques like CC-CV, GITT and PITT should be available. Battery Capacity Determination Technique should be available. Corrosion: Linear polarization with Tafel Slope Analysis, Polarization resistance evaluation, Electrochemical Noise analysis, critical pitting technique, electrochemical frequency modulation, hydrogen permeation analysis etc.</p> <p>Battery &amp; Supercapacitor Analysis: Rectangular CV analysis at varying scan rates for pseudocapacitor analysis, complete charge and discharge with built in integration and 'linkable' cut-offs, Galvanostatic charge discharge with cycle number vs specific capacitance plot, Voltage measurement on counter electrode, etc.</p> <p>Solar Cell Characterization: I-V plotting with automatic determination for max power point &amp; fill factor, IMPS-IMVS evaluation, EQE / IPCE Analysis, Charge extraction, Photo-current response, Mott Schottky plots for single frequency scan, etc.</p> <p>Electro-catalysis: ORR analysis using RDE/RRDE at varying rotation speeds and built-in Kotecky-levich plot generation, HER and OER analysis for water splitting, Carbon dioxide reduction analysis, default technique for spectro-electrochemistry based LSV, CV and Chrono evaluation.</p> <p>3D Based Live Plotting: Powerful graphic engine with useful features such as individual Axis scaling, overlays, multiple Y-axes, plot addition, 3D zooming and rotation. Each plot should be saved as a vector image file to use directly in paper or presentation. Minimum 10+ plot could be plotted simultaneously.</p> <p><b>Computer:</b> A PC (Intel i7 Processor, 3 GHz Processor Speed, 16 GB RAM, 1TB HDD, 22-inch LED Monitor, Keyboard and optical mouse, 64 bit compatible) with latest version of Windows compatible operating software must be provided for smooth running of the unit/workstation.</p>
2	<p><b>Electrochemical Impedance Spectroscopy:</b> The workstation must have electrochemical impedance spectroscopy (EIS) characterization facilities. In future EIS upgradation should be available without changing cabinet/chassis. Electrochemical Impedance Spectroscopy and Frequency Range: 10 <math>\mu</math>Hz to 1 MHz or better. Frequency resolution &lt; 10 ppm of the setting Sinus amplitude 0.5 mV to 2.5 V with 1 mV resolution 0.1% to 100% of the current range with resolution of 0.004% of the range. Mode single sine, multisine, FFT analysis, EIS quality indicator, built-in EIS simulation software, real time or post analysis fit-simulation, live issejous plots, live 3D plotting, real-time view of 3+ plots. Built-in analog integrator and IR compensation, capability to measure plot integrated charge and integrated current in real time.</p>



3	<p><b>Dual mode Bipotentiostat:</b> One channel must be able to be converted to a dual channel potentiostat with which measurements on a working electrode can be performed sharing the same reference and counter electrode. The potential and current must have an accuracy of 0.2% or better. The potential range should be 10V. The module must allow maximum current of at least 50 mA.</p> <p>1 unit of complete Rotating Ring Disc Electrode electrochemical cell 1 unit of complete Rotating Ring Electrode electrochemical cell</p>
4	<p><b>Current Booster:</b> The workstation must be provided with an additional module for high current input (up to 10 Amp) with potential range (+/- 10 V) and compliance range of <math>\pm 12</math> V.</p>
5	<b>Electrochemical Cells:</b>
5.1	1 unit of complete flat cell kit [250 ml capacity with 1 cm <sup>2</sup> working area (exposure) as per ASTM standard] with Ag/AgCl reference electrode, platinum mesh counter electrode, and glassy carbon working electrode must be provided.
5.2	3 units of Small Voltammetry Cell kit: A 3-electrode Set-up: WE – 2 mm GC; CE – Pt; RE - Non-Aqueous Ag/AgCl and Aqueous Ag/AgCl; Vessel – 50 ml with teflon cap; inlet/outlet gas purging facilities must be provided.
5.3	2 units of Two electrodes Swagelok cell: Easy to assemble Swagelok cell in PEEK 9 or equivalent) body with bore diameter of 8 mm must be provided.
6	<b>Electrical Accessories:</b>
6.1	1 unit of Air conditioner of 1.5-ton capacity (split A/C inverter type) with installation and necessary cables for uniform temperature control of the unit/workstation during testing and measurement.
6.2	Power Backup: A 2 KVA or more online UPS from a reputed supplier with minimum 30 min battery backup must be provided for uninterrupted data acquisition and smooth operation of the unit/workstation.