



P. G. DEPARTMENT OF CHEMISTRY
UTKAL UNIVERSITY, VANI VIHAR,
BHUBANESWAR-751 004, ODISHA
Email: bljena@utkaluniversity.ac.in, Tel: 8917574399

Tender/DST, SERB-SURE/INDIA/03/2023

Date: 29.11.2023

TENDER CALL NOTICE

Sealed tender quotations are invited by the undersigned from the reputed manufacturers/authorized dealers, DGS & D rate contract holders for purchase of Instrument (CHI-Electrochemical Workstation), Chemicals and consumables (Glasswares, Laboratory wares, plastic wares, electrodes) under DST, SERB-SURE, Govt. of India sponsored project “**Transition Metal Based Defective Electrocatalyst for Hydrogen and Oxygen Evolution Reaction**” so as to reach the undersigned by 13.12.2023 upto 5.00 PM through registered post/speed post. The tender will be opened on 15.12.2023 at 3.00 PM in the presence tenderer or their authorized representatives. All the documents such as EMD of 1 % of the estimated cost of equipment value or minimum of Rs.1000, STCC/ITCC/TIN/GST no. certificates along with literature/brochure and market standing certificate along with satisfactory certificates should be enclosed with technical bid only, failing which the tender will be cancelled. The details of items, specification and other terms and condition can be obtained from the office of undersigned on payment of INR 200.00 (non-refundable) between 11.00 AM to 3.00 PM on working days or can be downloaded from website www.utkaluniversity.ac.in. Form downloaded from the website must accompany Rs. 200 towards the cost of tender paper. Payment of EMD and purchase of tender paper will be through Bank Draft in favour of “**TRASITION METAL EVOLUTION REACTION**” payable at Bhubaneswar. The authority reserves the right to cancel the tender at anytime without assigning any reason thereof.

Eligibility Criteria:

1. Tenders are to be submitted in the prescribed format (enclosed) in the tender paper along with EMD/ security amount (1 %) of the approximate cost of equipment value or minimum of Rs.1000/-(Rupees One thousand) only as mentioned in the tender paper drawn in favour of the “**TRASITION METAL EVOLUTION REACTION**” in shape of a Bank Draft drawn on any nationalized bank payable at Bhubaneswar. No cash payment shall be received in this regard.
2. Tender forms are not transferable.
3. Bids have to be given in the desired format separately to supply the equipment with accessories. Bids should be submitted along-with the following documents:
 - (i) Sales Tax, Income Tax, VAT Certificate, GST Certificate or the Excise License etc. necessary for items.
 - (ii) Non-assessment Certificate in case of Dealers / Stockist outside the state of Odisha.
 - (iii) Authorization Certificate from the Company.

(iv) **All rates in INR should be inclusive of all taxes and F.O.R destination (P.G. Department of Chemistry, Utkal University, Bhubaneswar).**

(v) Installation charges, Delivery, Packing, Forwarding charges etc. should be included in quoted price and no extra cost will be entertained after delivery.

N.B.:

1. Last date for submission of sealed tender paper is **13.12.2023** upto **5.00 p.m.** in the Office of Dr. Bijayalaxmi Jena, P.G. Department of Chemistry, Utkal University, Bhubaneswar through registered post/speed post.
2. Bank Guarantee for EMD is not valid.
3. The authority may cancel the tender as a whole or a part without assigning any reason thereof.
4. All supplies have to be made within 30 (thirty) days of the confirmed order received by the firm otherwise the order shall be treated as cancelled.
5. EMD of the parties whose Tender is not accepted will be refunded on submission of a stamped receipt.
6. Exemption in price (if any) under production of DSIR certificate should be indicated
7. Filled tender paper must contain all specifications, terms and conditions in a systematic manner and should not leave anything guessing to the undersigned.

Dr. Bijayalaxmi Jena
Principal Investigator
bljena@utkaluniversity.ac.in
Ph. No. 8917574399

1. CHI ELECTROCHEMICAL WORKSTATION
FORMAT

Dated:.....

Tender Form No:.....

From:

M/S-----

To,

The Principal Investigator,

DST, SERB-SURE/INDIA

P.G. Department of Chemistry,

Utkal University, Vani Vihar, Bhubaneswar-751 004

(Kind attention: Dr. Bijayalaxmi Jena)

Sub: Supply of _____

Ref. Advertisement (name of the Newspaperand Date:.....

EMD/Security Amount: Rs.....(Rupees.....

.....) only in shape of D.D in favour of

“TRANSITION METAL EVOLUTION REACTION”

D.D No....., Dated:.....

Sl. No.	Name of the item and specifications	Unit cost in total (F.O.R.) in INR
1.	<u>CHI ELECTROCHEMICAL WORKSTATION</u> <u>Potentiostat</u> <ul style="list-style-type: none">• 2- or 3 or 4 electrode configuration• Maximum potential: ± 10 V or better• Maximum current: ± 250 mA continuous (sum of two current channels), ± 350 mA peak or better• Compliance Voltage: ± 13 V or better• Potentiostat rise time: $< 1 \mu\text{s}$ or better• Applied potential resolution: 0.0015% of potential range• Applied potential accuracy: ± 1 mV, $\pm 0.01\%$ of scale• Measured current resolution: 0.0015% of current range, minimum 0.3 fA or better• Current measurement accuracy: 0.2% or better	

- Input bias current: < 20 pA

Galvanostat

- Galvanostat applied current range: 3 nA - 250 mA
- Applied current resolution: 0.03% of applied current range
- Measured potential resolution: 0.0015% of measured range

Electrometer

- Reference electrode input impedance: 1×10^{12} ohm
- Reference electrode input bandwidth: 10 MHz
- Reference electrode input bias current: ≤ 10 pA @ 25°C

Waveform Generation and Data Acquisition

- Fast waveform update: 10 MHz @ 16-bit
- Fast data acquisition: dual channel 16-bit ADC, 1,000,000 samples/sec simultaneously

Experimental Parameters

- CV and LSV scan rate: 0.000001 to 10,000 V/s, two channels simultaneously
- Potential increment during scan: 0.1 mV @ 1,000 V/s
- CA and CC pulse width: 0.0001 to 1000 sec
- CA and CC minimum sample interval: 1 μ s
- i-t sample interval: minimum 1 μ s, both channels
- DPV and NPV pulse width: 0.001 to 10 sec
- IMP frequency: 0.00001 Hz to 1 MHz
- IMP amplitude: 0.00001 V to 0.7 V rms

Techniques

- Cyclic Voltammetry (CV)
- Linear Sweep Voltammetry (LSV) with stripping
- Staricase Voltammetry (SCV) with stripping
- Tafel Plot (TAFEL) potentiodynamic deactivation, pitting corrosion, corrosion rate, linear Polarisation, Corrosion current etc.
- Chrono Amperometry (CA)
- Chrono Coulometry (CC)
- Differential Pulse Voltammetry (DPV) with stripping

- Normal Pulse Voltammetry (NPV) with stripping
- Differential Normal pulse Voltammetry (DNPV) with stripping
- Square Wave Voltammetry (SWV) with stripping
- AC Voltammetry (ACV) with stripping
- Second Harmonic AC Voltammetry (SHACV) with stripping
- Fourier Transform AC Voltammetry (FTACV)
- Amperometric i-t Curve (i-t)
- Differential Pulse Amperometry (DPA)
- Double Differential Pulse Amperometry (DDPA)
- Triple Pulse Amperometry (TPA)
- Integrated Pulse Amperometry Detection (IPAD)
- Bulk Electrolysis with Coulometry (BE)
- Hydrodynamic Modulation Voltammetry (HMD)
- Sweep-Step Functions (SSF)
- Multi-Potential Steps (STEP)
- Polarisation I-V curves Linear Sweep
- AC Impedance (IMP)
- Impedance – Time (IMPT)
- Impedance – Potential (IMPE) (Mott-Scottsky)
- Chrono Potentiometry (CP)
- Chronopotentiometry with Current Ramp (CPCR)
- Multi-Current Steps (ISTEP)
- Potentiometric Stripping Analysis (PSA)
- Electrochemical Noise Measurement (ECN)
- Open Circuit Potential – Time (OCPT)
- Galvanostat
- RDE control (0-10V output)
- Full version of CV simulator with fitting program
- Impedance Simulator and fitting program
- IR Compensation
- External Potential Input
- Auxiliary Signal Measurement Channel
- Bode and Nyquist plot can be done

Battery Charge/Discharge

- Galvanostatic Charge discharge single/multiple cycle -Chrono Potentiometry (CP) with potential limits, polarity by potential or time, no. of cycles etc
- Voltage vs current density curves

Deposition Studies

- Single or Multi potential steps with charge limits, single or multi current steps, mixed voltage/current control using macro

Photovoltaic studies

- Software provision for measurement of I-V measurements, I max, Pmax, Fill factor etc

Accessories

- glass cell(50ml) - 2 Nos
- Two cell top

Software:

Licensed and full version of software for all the functions and procedures mentioned above. Software provision for In-situ Raman analysis. Software provision for measurement of I-V measurements, I max, Pmax, Fill factor etc

Up gradation of software:Digisim Simulation software need to provide. Up gradation of software should be made as and whenever required.

Laser / Light: 635 nm & 840nm lasers with power adapter.

Computer

Latest version computer compatible with instruments software

System configuration: Core- i3 Processor, 8GB RAM, 1TB Hard Drive, 19’’ LED Monitor, DVD Writer, Keyboard, Mouse .

Warranty: 1 year + 3 years AMC

Service Facility: Supplier should mention their details of service setup and man powers, who are responsible for after sales support. Response time should be within 48-72 hrs

Optional

- System current range should be upgradable up to 2A when required
- Provision for Photo electrochemistry Setup In future

2. CHEMICALS AND CONSUMABLES
FORMAT

Dated:.....

Tender Form No:.....

From:

M/S-----

To,

The Principal Investigator,

DST, SERB-SURE/INDIA

P.G. Department of Chemistry,

Utkal University, Vani Vihar, Bhubaneswar-751 004

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.....) only in shape of D.D in favour of

“TRANSITION METAL EVOLUTION REACTION”

D.D No....., Dated:.....

Sl. No.	Name of the item and specifications	Unit cost in total (F.O.R.) in INR
2	A. Chemicals GR/LR/AR Grade Chemicals are required for Research purpose from the following Manufacturers 1.Aldrich 2.S D Fine 3.Rankem 4.Finar 5.Fischer 6.Himedia 7.Loba 8.Merck 9.Qualigen	

10.SRL

B. Glassware

- 1.Borosil
- 2.Qualigen
- 3.Loba
- 4.Merck
- 5.RFCL

C. Laboratory Ware

1. REMI – 2MLH
2. Himedia
3. Tarson
4. Fisher

D. Plastic ware

5. Tarson
6. Merck
7. Himedia

% of discount on printed catalogue price against various manufacturers for above mentioned items to be quoted.

Electrodes

1. **Glassy Carbon working electrode:**
Length-80mm , Total electrode dia-6.35mm and GC dia-3mm
2. **Glassy Carbon Plate:** 20mm x 20mm x 3mm
3. **Alkaline/Mercury Oxide Reference Electrode :**Electrode impedance: <10K Ω , Potential at 25°C: 0.098V,Flow rate at the interface: 1drop/10min,The solution in the salt bridge: 1M KOH)

Signature of the Manufacturer
/ Authorized Dealer with Seal