

नागालैण्ड
NAGALAND



विश्वविद्यालय
UNIVERSITY

(संसद द्वारा पारित अधिनियम 1989, क्रमांक 35 के अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)
(A Central University Established by the Act of Parliament No.35 of 1989)

मुख्यालय : लुमामी, जिला : जुन्हेबोटो (नागालैण्ड), पिन कोड - 798 627

Headquarters: Lumami, District: Zunheboto (Nagaland), Pin Code - 798 627

No. NUL/RDC-20/DST-FIST/2016 -

Dated: 24.02.2021

NOTICE INVITING TENDER

Nagaland University invites sealed tenders from reputed Original Equipment Manufacturers/Authorised Dealers/Bidders for supply and installation of equipments under the DST-FIST programme, Department of Chemistry, Nagaland University, Lumami. Interested firms may download the tender documents and Terms and Conditions from the University website: nagalanduniversity.ac.in and submit their quotations along with tender fees of ₹ 1,000/- (non-refundable) in the form of DD in favour of Registrar, Nagaland University, Lumami in a sealed envelope, superscript on the cover "Tender for supply of Equipments under DST-FIST programme, Department of Chemistry, Nagaland University, Lumami" and addressed to the undersigned on or before 17th March, 2021 up to 4:00. P.M. No tenders will be accepted beyond this date and time.

Sd/-
Vice-Chancellor

No. NUL/RDC-20/DST-FIST/2016 - 3459

Dated: 24.02.2021

Copy to:-

1. The Secretary to VC, Nagaland University for kind information of the Vice Chancellor
2. The Finance Officer, Nagaland University, Lumami for information
3. The Head, Department of Chemistry, Nagaland University, Lumami for information
4. The System Administrator, Nagaland University, Lumami, with a request to upload the NIT in the University website
5. The Editor/Manager, Nagaland Post, Dimapur for one time publication in a size (6 cm x 2 columns) in the next daily issue. Bills in triplicate should be submitted for payment.
6. The Editor/Manager, Arihant Advertising Agency, S.R.C.B. Road, Fancy Bazar, Guwahati - 781001 with a request to publish in the Times of India, North East Edition for one time publication size (6 cm x 2 columns). Bills in triplicate should be submitted for payment
7. Notice Board, Nagaland University, Lumami
8. Office file


Registrar

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TERMS AND CONDITIONS:

1. Dealership certificate/Authorization certificate from the Manufacturer should be enclosed.
2. Tax should be clearly indicated.
3. The Rates are FOR Nagaland University, Lumami.
4. Delivery of the items should be within 30 days from issue of supply order.
5. EMD of 2% of the total quoted prize in the form of DD should be deposited in favour of the Registrar, Nagaland University, Lumami
6. Defective items should be replaced at the cost of supplier.
7. The rates quoted should be inclusive of installation and all other applicable charges
8. The University reserves the right to accept or reject the tenders without assigning any reasons thereof and no representation will be accepted.

TERM OF PAYMENT

100% Payment after the receipt, inspection, acceptance of equipments and successful installation of all the equipments.

NOTE: Offers not agreeing with the above terms are liable for rejection.

K. C.
24.02.2024

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TENDER DOCUMENT FOR SUPPLY OF EQUIPMENTS UNDER THE DST-FIST PROGRAMME,
DEPARTMENT OF CHEMISTRY, NAGALAND UNIVERSITY, LUMAMI

Name of the Firm : _____

Address : _____

Phone No : _____

Email ID : _____

Sign & Seal

Specification of Complete Lab Ultra Pure Water Purification System directly from tap

Prefilter: Should be customized based on feed water quality test report. It should come with integrated booster pump and should produce water that qualifies feed water requirement of the main system to ensure minimum recurring cost down the line.

The Complete Ultrapure Water system must give ASTM Type III pure and Type I ultrapure water from a single system.

Water purification methods: Adsorption by means of spherical activated carbon, catalyst, reverse osmosis, ion exchange, optional UV irradiation, and end-position particle | sterile filtration

- The system should handle Conductivity < 1500 $\mu\text{S}/\text{cm}$, TOC < 2000 ppb, Free chlorine < 4 ppm, Fouling Index (SDI) < 10.
- The unit should be ideal for a daily consumption of up to 10 liters of ultrapure water with 8l/hr. pure water production rate.
- Pretreatment Cartridge should be a combination of spherical, catalytic-effective, activated carbon, a catalyst and a downstream reverse osmosis membrane.
- The system should come with closed bag system of 5 liter inbuilt to store consistently high quality pure water for prolonged period and prevent Contamination by ambient air. Should have technology to avoid time consuming cleaning process as well as use of chemicals.
- System should have a horizontally mounted integrated UV lamp with dual wavelength 185 and 254nm for optimized temperature gradient and reliable results.
- Deionization cartridge should consist of spherical, catalytic activated carbon with ultrapure mixed bed ion exchange resin in semiconductor quality to deliver long lasting performance and low-maintenance operation. The flow inside the cartridge should be top-down to produces ideal purification kinetics and prevents any mixing of cleaning media.
- Final Filter should be 0.45+ 0.2 μm pleated double layered sterile grade PESU membrane and should be validated according to HIMA & ASTM F-838-83 guidelines.
- System should have touch screen display with intuitive menu navigation facility for easy operation.
- Re-circulation feature in standby mode to maintain the purity of the water.
- The system should have the volume-controlled dispensing function from 50 ml to 5 l (in 50-ml-increments) to obtain accurate results.
- System should be Designed, Developed and Produced under DIN/ISO 9001 certificate Quality Management system. Also ISO-9001 Company.

Product Water Quality-Type-III

Production output: Up to 8 l/h

Typical Conductivity: < 20 $\mu\text{S}/\text{cm}$

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Typical ion retention: Up to 98%

Retention of dissolved organic substances: > 99 %
(MW > 300 Dalton)

Particle and microorganism retention: > 99 %

Product Water Quality-Type-I

Water dispensing flow rate: Up to 1.0 l/min

Conductivity: 0.055 $\mu\text{S}/\text{cm}$ compensated to 25°C

Resistivity: 18.2 $\text{M}\Omega \cdot \text{cm}$ compensated to 25°C

TOC content (system with UV lamp) < 5 ppb

Microorganism content < 1 CFU/1,000 ml

Particle content (> 0.2 μm) < 1/ml

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RRDE/RDE Cell Accessory: Qt. 1

A 300 ml or higher total volume three electrode set-up is required with following features:

- Gas tight construction with flangeless fittings
- A combination of chemically inert and organic solvent resistive materials including Teflon lid,
- 3mm GC disc RDE electrode 1no, GC disc Pt ring electrode 1 no, Double junction Ag/AgCl reference electrode 1 no, Pt wire counter electrode 1 no. Suitable Lid for the cell.

Software

The system software must have capability for hybrid measurements such as Spectro-electrochemistry, E-SPR, SECM, IMPS-IMVS, EQCM, etc. It should have TTL triggering, ADC, DAC based communication ports. The Software must be able to be downloaded to unlimited computers, free updates & fully windows based. Software should be capable of supporting a wide variety of electrochemical techniques as mentioned below:

Corrosion: Linear polarization with Tafel Slope Analysis, Polarization resistance evaluation, Electrochemical Noise analysis, critical pitting technique, **electrochemical frequency modulation**, hydrogen permeation analysis etc.

Battery & Supercapacitor Analysis: Rectangular CV analysis at varying scan rates for pseudo capacitor 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, GITT, PITT, etc.

Solar Cell / Fuel Cell Studies: Linear polarization, I-V plotting with automatic determination for max power point & fill factor, IMPS-IMVS evaluation, EQE / IPCE Analysis, Charge extraction, Photo-current response, Mott-Schottky plots for single frequency scan, automated band-gap analysis, etc.

Electro-catalysis / Electro-deposition: ORR analysis using RDE/RRDE at varying rotation speeds and built-in Kotecky-levich plot generation, HER and OER Tafel based analysis for water splitting, Carbon dioxide reduction analysis, default plug-n-play protocol for spectro-electrochemistry based LSV, CV and Chrono evaluation, Galvanostatic CV and Chrono, ASV, DPSV, etc.

Trace Metal Analysis / Polarography: DPSV, ASV, Chrono Coulometry, etc.

Sensors: Automated one-click protocol for CV and LSV analysis at varying scan rates, fully automated single click amperometric detection protocol, EIS measurement with real-time equivalent circuit fit option, etc.

3D Based Live Plotting: Powerful graphic engine with useful features such as vector graphics, individual axis scaling, overlays, multiple Y-axes, plot addition, real-time 3D with zooming and rotation. Minimum 10+ plot could be plotted simultaneously.

Computer Station:

A suitable branded Desktop/Laptop like Dell or Compaq or equivalent for system control & data acquisition should be offered with the system. It should have following minimum specs: CPU Intel Core i5, RAM 8 GB RAM, HDD 500 GB, GPU DirectX 9.0c compliant display adapter with 1GB RAM, TFT Monitor 21 inch, 101 Keys Keyboard, Optical Mouse, 3 USB Ports. Software should be freely upgradable in future. The model and the software capability offered should be well documented in the brochure/catalogue and should be available at Principal website.

Any-time Switchable Option 1 Vs BIPOT: A Multiplexer Module to allow Sequential Electrochemical Measurement from 4 to 64 independent Cells: Future Expandability

Any-time Switchable Option 2 Vs BIPOT: A EIS module for impedance measurement

Warranty: 1 year + 2 years AMC free or 3 Years Manufacturer's Warranty Certificate

Note: Vendor should be an authorized provider of sophisticated high-precision potentiostat/galvanostat systems for past 15 Years or more with a

- A proven track record in multiple countries and national institutes
- Standard quality certifications such (ISO 9001)
- 10+ past installations of similar systems in India in past two years.

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ELECTROCHEMICAL WORKSTATION

A compact potentiostat / galvanostat is required that can individually allow EIS, multiplexing and bi-potentiostat options on separate channels. The specifications should be as follow:

Technical Specifications

- Compliance voltage: Standard ± 15 V or better at ± 350 mA current
Note: Adjustable compliance voltage configurations not allowed
- Maximum Output Current: ± 350 mA or better at ± 15 V.
- Current booster: ± 8 A measured current or better with Current Booster at unchanging compliance voltage of ± 15 V and 0.0005% measured current resolution
- Output Voltage Range: ± 10 V or better
- Maximum scan rate: **800V/s with 35 mV steps – Required**
- Current Ranges: ± 10 nA to current range 100 mA in multiple ranges
- Measured current accuracy: 0.0053% of current range: Must be a default hardware configuration without any additional external accessories or current boosters – **Required**
- Built-in Current Integrator: We require to separate faradaic current from capacitive current and also directly measure integrated charge in real-time rather than current
- Built-in Electromagnetic Noise filter: The system hardware must have internal third order Sallen-key filters for removing background noise that cannot be removed by simple measures such as faraday cage
- Measured Potential Resolution: $5\mu\text{V}$ or better
- Potentiostat Rise/fall Time: < 500 ns or lower
- Interface: USB interface for connection with PC.
- Input bias current: < 1 pA
- Bandwidth of electrometer: > 4 MHz
- Input impedance of electrometer: > 50 GOhm // 8 pF

Internal Bi-potentiostat Expandability Option for Each Channel: Qt. 1

- An internal dual-mode bi-potentiostat option is required. Parallel measurements should be possible on two working electrodes sharing the same counter and reference electrode. The bi-potentiostat feature should be functional in at least two modes. In the first mode, a fixed potential is required to be applied to the second Working Electrode while applying a potential step or a sweep to the first Working Electrode. In the second mode, a potential offset with respect to the first working electrode is required to be applied to the second working electrode.

A Rotating Ring Disk Electrode and RRDE Cell Set-up: Qt. 1

- A complete set-up for rotating disk electrode measurements is required including a dedicated RRDE cell for oxygen reduction reaction (ORR) studies. The RRDE vessel should have nitrogen-purging, temperature control as well as advanced options for remote controlled liquid dosing of moisture-sensitive electrolytes. The rotor should have the capability for remote as well as manual control. A maximum rotating speed of 10,000 rpm or more is required for high speed hydrodynamic EIS evaluation of diffusion coefficients for ORR measurements. Various types of RRDE and RDE tips of gold, platinum and glassy carbon (1 each) should be supplied along with Ag/AgCl reference and platinum wire counter electrode. The RRDE software should have fully automated analysis and plotting option for Levich and Koutecky-Levich analysis.

The system must have capability for hybrid measurements such as E-SPR, S-ECM, Spectro-electrochemistry, IMPS-IMVS, EQCM, etc. It should have TTL triggering, ADC, DAC based communication ports.

Electrochemical Cell Accessory: Qt. 1

A 50 mL total volume three electrode set-up is required with following features:

- Gas tight construction with flangeless fittings
- A combination of chemically inert and organic solvent resistive materials including (i) lid, electrode plugs and gas fittings, (ii) glass; chamber
- 3 mm GC disc type electrode, Ag/AgCl electrode, platinum wire counter Electrode; Gas purging Option

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