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From: Director, CSIR-NPL
Tender No. 14-VI/VE(1119)22PB/T-54 Dated: 28.08.2023

CORRIGENDUM

With reference to NPL's Global Tender ID: **2023_CSIR_719498_1**, Pre-Bid Conference (PBC) was concluded on 01.08.2023 for "Electrochemical Analyzer". Consequent upon the outcome of PBC, **some changes have been made in the technical specification of captioned tender. Revised specifications are as follows:**

ANNEXURE-1	
Technical Specification of Electrochemical Analyzer/ Workstation	
PC controlled, modular, high power cabinet to accommodate eight or more number of channels with two operating channels, electrochemical Analyzer/Workstation (PGSTAT) with digital display should be supplied with the following specification and accessories:	
A.	**Specification for Potentiostat/Galvanostat system** Compliance Voltage: ± 20 V or better Maximum Current: ± 400 mA or better Current Ranges: ± 10 nA to current range 100 mA applied Potential: ± 10 V or better Applied potential accuracy: ± 0.2% or better Current resolution: 0.0005% of current range or lower Current Ranges: ± 10 nA to current range 100 mA Measured current resolution (at 10nA range full scale range): 0.0005% of current range 30 fA or better Potentiostat Rise/fall Time: 200 ns or lower Interface: USB interface for connection with PC Input bias current @25°C: < 1 pA Bandwidth of electrometer: > 4MHz or better Input Impedance of electrometer: > 1 TOhm // 8 pF iR-compensation resolution: 0.025% System should be upgradable onsite with Current Booster of 10A (with comply voltage +/- 10V current resolution of 0.0003% & accuracy +/- 0.5%) or higher current range in future. External input/output signals: 2; Digital I/O lines: 48

B	**Electrochemical Impedance Spectroscopy Module** Hardware and software for EIS measurements in potentiostatic and galvanostatic control, over frequency range of **10 µHz to 1 MHz**. It should be possible to perform EIS measurements over entire frequency range from 10 µHz to 1 MHz upto 2000 mA currents. Signal generator frequency range 10 µHz - 30 MHz (or higher), **Frequency range in 10 µHz - 1 MHz combination with potentiostat galvanostat expandable to 10MHz**. Frequency resolution 0.003%, Input range ± 10 V. Data presentation: Nyquist, Bode, Admittance, Dielectric, Mott- Schottky, Data analysis: Fit and Simulation, Find circle, Element subtraction.
C	**Bipotentiostat with RRDE (Electro-catalysis Setup)** System should be supplied with a Rotating Ring Disk Electrode (RRDE) Setup with dedicated bipotentiostat module (capable of controlling a four electrode system) and RRDE Rotator (with rotating speed of 10000 rpm or higher with 1 RPM step), controller & electrode cable. Compatible RRDE tips (3 – 6 mm dia) of Glassy Carbon (GCPt) along with original OEM suitable cell (300ml) setup including Ag/AgCl ref electrode, Pt sheet electrode, support stand with rod, sleeve, thermometer, lid clamp, vessel etc. 1 No – each
D	**UV VIS Spectro-Electrochemistry Setup** Complete dedicate UV VIS spectro-electrochemistry setup including with Light Source (wavelength range 200 - 1100 nm), Optical Fiber, spectro-electrochemical cell with compatible electrodes (Pt gauss working electrode, Pt wire counter electrode, Ag/AgCl Reference Electrode) for electrochemical measurement inside cuvette in transmittance with spectra collection at user defined intervals via one integrated software. All suitable cables, accessories should be provided for smooth functioning and integration.
E	**Coin cell Holder (Battery testing): Two numbers** Suitable battery coin cell holder able accommodate two cells of size: 1.6 mm–3.2 mm thickness / 20 mm–24 mm diameter, standard cell sizes: CR2016, CR2020, CR2025, CR2032, CR2325, CR2330. Temperature range of operation: -25°C and + 80°C
F	**SPE cell/Holder (Biosensors): 1 Set** An adapter/holder for screen printed electrode (SPE) should be provided which can be used for connecting SPE with the PGSTAT instrument. It should be compatible with electrochemical cell with vessel 5-10ml and suitable holder. Screen printed electrodes: Carbon (30nos), Au (30nos), Pt (15nos) should be supplied with the system
G	**Electrochemical cell setup & Electrodes: 1 set** Cell Vessel (20-90ml), Cell vessel lid with sleeve, mounting ring, stoppers, GC Working Electrode (2nos), Au, Pt Working Electrode (2 nos), Ag/AgCl Reference Electrode (2nos), Pt Wire Counter Electrode (2nos), Polishing Set Al_2O_3(2nos)
H	**Corrosion Cell setup: 1 set** OEM 250 mL or more thermostatic jacketed vessel, operating temperature range: 0-80°C corrosion cell designed for most corrosion experiments with exposed surface

	area is 1 cm^2. Jacketed ASTM Grade Set-up that allows all major ASTM protocols including linear polarization tests, potentio-dynamic tests, critical pitting EIS based inhibitor tests
I	**Dummy Cell** To measure 1 Mohms resistance and 1 microfarad capacitance (1 No)
J	**Electrochemical Software** Software should have control of electrochemical work station/analyzer, Data Acquisation, storage and data analysis. Software facility to record additional signal viz EQCM, bi-potentiostat, integrated spectro electrochemical UV/VIS measurement, battery, super capacitors, solar measurements etc. Import/export ASCII. Ready-to-use Vis & Generic interface for .Net applications should be included. It should have facility to display up to 4 plots simultaneously. The software should support following basic electrochemical measurements: Cyclic Voltammetry, Sampled DC Voltammetry, Tafel Plots, Differential Pulse Voltammetry, Square Wave Voltammetry. Electrochemical methods like Chrono-Amperometry, Chrono-Coulometry & Chrono-Potentiometryetc.
K	**Suitable Computer (1no):** A suitable Dell/HP make Laptop with Processor i7, 16GB RAM, SSD 500GB, original MS WIN 10 PROF, MS office, graphic card, 21" inch or more display
L	**Warranty:** Three years onsite
M	All electrochemical accessories, modules, cells, channels etc. should be from the single manufacturer (OeM) and should have full compatibility with the main system and control via single software.
N	Vendor should provide line by compliance to the requirement above with supporting technical documents along with after sales service support center in India and user list.
O	Vendor should arrange for the demonstrate the system modules such as EIS, UV VIS Spectro-Electrochemistry, coin cell measurement, screen printed electrode (SPE) measurement etc. from the users of same instrument from India after bid.

Therefore, following extension in due date of submission & date of opening of the said tender may be read exactly as follows:

Due date & time of tender submission
For : 29.08.2023 up to 3:00 PM (IST)
Read as: 14.09.2023 up to 3:00 PM (IST)

Date & Time of Tender Opening
For : 30.08.2023 at 3:00 PM (IST)
Read as: 15.09.2023 at 3:00 PM (IST)

All other terms & conditions of said tender will remain the same.

Sr. Controller of Stores & Purchase

Minutes of the Meeting (MOM) of the Pre-Bid Conference (PBC) held on 01/08/2023 (Tuesday) at 4.00 PM in Second Floor Conference Room, Main Building for the procurement of Electrochemical Analyser

Ref: (i) CSIR-NPL Tender No. # 14-VI/VE (1119)22PB/T-54 (CPP Portal Tender ID No. 2023_CSIR_719498_1).
(ii) CSIR-NPL Indent No. PR5031102022 dated: 23/03/2023

The Pre-Bid Conference for the procurement of 'Electrochemical Analyser' was held 01/08/2023 (Tuesday) at 4.00 PM in Second Floor Conference Hall, Main Building CSIR-NPL. Following vendors & their representatives participated in the Pre-Bid conference.

1. Mr. Nikhil Bansal, **METROHM India Private Ltd.**, #DSM 723 & 724, DLF Towers, Block IV, 15, Shivaji Marg, New Delhi-110015, India
2. Mr. Vikas yadav, **APLAB ENGICHEM PVT. LTD.**, 706, Abhishree Avenue, Opp. Hanuman Temple, Nehrunagar, Ambawadi, Ahmedabad-380015, Gujarat-India

The following committee members were present:

1) Dr. H. K. Singh (CSIR-NPL)	Chairman
2) Dr. Anjana Dogra (CSIR-NPL)	Member
3) Dr. Sachchidananda Singh (CSIR-NPL)	Member
4) Dr. Safir Ahamad Hashmi (Professor, Dept of Physics, University of Delhi)	External Expert
5) Dr. V. Ezhilselvi	Indenter

The IO presented the tendered specification to the pre-bid participants. Each point in the technical specifications was discussed in detail. The representative, Mr. Nikhil Bansal, METROHM India Private Ltd., requested clarification about the number of channels required for the multichannel electrochemical analyzer. The query has been accepted completely and the IO recommended a high-power cabinet to accommodate eight or more channels with two operating channels for the Electrochemical Analyzer system. Mr. Vikas Yadav, APLAB ENGICHEM PVT. LTD raised doubt about the repeated item in S.No J: SPE cell/Holder (Biosensors) specifications. The query has been accepted and IO agreed to delete the repeated item in S.No. J. The TSC looked into those issues and agreed to modify the specifications without changing the required level of measurements etc. Accordingly, the specifications were modified by incorporating the suggestions given by the T&PC/TSC members. The approved technical specification is attached herewith as Annexure-1. The comparative statement of tendered and modified technical specifications is enclosed.

Comparative Statement of Tendered and Modified Technical Specifications of Electrochemical Analyzer/ Workstation		
Tendered Specification		**ModifiedSpecification**
PC-controlled, modular, high-power multichannel electrochemical Analyzer/Workstation (PGSTAT) with digital display should be supplied with following specification and accessories:		PC-controlled, modular, high power cabinet to accommodate eight or more number of channels with two operating channels, electrochemical Analyzer/Workstation (PGSTAT) with digital display should be supplied with the following specification and accessories:
A.	**Specification for Potentiostat/Galvanostat system** Compliance Voltage: ± 20 V or better Maximum Current: ± 400 mA or better Current Ranges: ± 10 nA to current range 100 mA applied Potential: ± 10 V or better Applied potential accuracy: ± 0.2% or better Current resolution: 0.0005% of current range or lower Current Ranges: ± 10 nA to current range 100 mA Measured current resolution (at 10nA range full scale range): 0.0005% of current range 30 fA or better Potentiostat Rise/fall Time: 200 ns or lower Interface: USB interface for connection with PC Input bias current @25°C: < 1 pA Bandwidth of electrometer: > 4MHz or better Input Impedance of electrometer: > 1 TOhm // 8 pF iR-compensation resolution: 0.025% System should be upgradable onsite with Current Booster of 10A (with comply voltage +/- 10V current resolution of 0.0003% & accuracy +/- 0.5%) or higher current range in future.External input/output signals: 2; Digital I/O lines: 48	-

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C	**Bipotentiostat with RRDE (Electro-catalysis Setup)** System should be supplied with a Rotating Ring Disk Electrode (RRDE) Setup with dedicated bipotentiostat module (capable of controlling a four electrode system) and RRDE Rotator (with rotating speed of 10000 rpm or higher with 1 RPM step), controller & electrode cable. Compatible RRDE tips (3 – 6 mm dia) of Glassy Carbon (GCPt) along with original OEM suitable cell (300ml) setup including Ag/AgCl ref electrode, Pt sheet electrode, support stand with rod, sleeve, thermometer, lid clamp, vessel etc. 1 No – each	-
D	**UV VIS Spectro-Electrochemistry Setup** Complete dedicate UV VIS spectro-electrochemistry setup including with Light Source (wavelength range 200 - 1100 nm), Optical Fiber, spectro-electrochemical cell with compatible electrodes (Pt gauss working electrode, Pt wire counter electrode, Ag/AgCl Reference Electrode) for electrochemical measurement inside cuvette in transmittance with spectra collection at user defined intervals via one integrated software. All suitable cables, accessories should be provided for smooth functioning and integration.	-

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G	**Electrochemical cell setup & Electrodes: 1 set** Cell Vessel (20-90ml), Cell vessel lid with sleeve, mounting ring, stoppers, GC Working Electrode (2nos), Au, Pt Working Electrode (2 nos), Ag/AgCl Reference Electrode (2nos), Pt Wire Counter Electrode (2nos), Polishing Set Al_2O_3(2nos)	-
H	**Corrosion Cell setup: 1 set** OEM 250 mL thermostatic jacketed vessel, operating temperature range: 0-80˚C corrosion cell designed for most corrosion experiments with exposed surface area is 1 cm^2. Jacketed ASTM Grade Set-up that allows all major ASTM protocols including linear polarization tests, potentio-dynamic tests, critical pitting EIS based inhibitor tests	-
I	**Dummy Cell** To measure 1 Mohms resistance and 1 microfarad capacitance (1 No)	-
J	**SPE cell/Holder (Biosensors): 1 Set** An adapter/holder for screen printed electrode (SPE) should be provided which can be used for connecting SPE with the PGSTAT instrument. It should be compatible with	**Deleted due to repetition**

	electrochemical cell with vessel 5-10ml and suitable holder. Screen printed electrodes: Carbon (30nos), Au (30nos), Pt (15nos) should be supplied with the system	
K	**Electrochemical Software** Software should have control of electrochemical work station/analyzer, Data Acquisation, storage and data analysis. Software facility to record additional signal viz EQCM, bi-potentiostat, integrated spectro electrochemical UV/VIS measurement, battery, super capacitors, solar measurements etc. Import/export ASCII. Ready-to-use Vis & Generic interface for .Net applications should be included. It should have facility to display up to 4 plots simultaneously. The software should support following basic electrochemical measurements: Cyclic Voltammetry, Sampled DC Voltammetry, Tafel Plots, Differential Pulse Voltammetry, Square Wave Voltammetry. Electrochemical methods like Chrono-Amperometry, Chrono-Coulometry& Chrono-Potentiometryetc.	-
L	**Suitable Computer (1no):** A suitable Dell/HP make Laptop withProcessor i7, 16GB RAM, SSD 500GB, original MS WIN 10 PROF, MS office, graphic card, 21" inch or more display	-
M	**Warranty:** Three years onsite	-
N	All electrochemical accessories, modules, cells, channels etc. should be from the single manufacturer (OeM) and should have full compatibility with the main system and control via single software.	-
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P	Vendor should arrange for the demonstrate the system modules such as EIS, UV VIS Spectro-Electrochemistry, coin cell measurement, screen printed electrode (SPE) measurement etc. from the users of same instrument from India after bid.	-