



Telephone :

EN

Department of Civil Engineering

Indian Institute of Technology, Madras

I.I.T.P.O., MADRAS - 600 036.

Ref. No.

CIE	EWIRE	Electro chemical	2014	SPLX
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Date : 8/7/2014

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Dear Sirs,

DUE DATE : 23/7/2014

1. Quotations are invited in duplicate for the various items shown ~~below / overleaf /~~ enclosed list.
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate contract. Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers)
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. Local Firms : Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated separately.
7. Firms Outside Chennai : Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If-Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of Sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. Payment : Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.

Details as per enclosed list.

Yours faithfully

For HEAD OF THE DEPT.

\*Strike out whichever is not applicable.

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## **Technical Specification for the Electrochemical Work Station with Impedance Spectroscopy System**

1. System should comply with minimum 4 channels able to perform independent and simultaneous measurements.
2. System should have the facility to connect multiple working electrodes with one counter and one reference electrode.
3. The current range for the channel 1 to 4 or more should be at least  $\pm 500$  mA or more with  $\pm 10$  V potential range and at least  $\pm 12$  V compliance.
4. The voltage resolution should be 1  $\mu$ V or better
5. The current resolution should be in femto ampere.
6. Fast acquisition speed around 1000,000 samples/second or better is required.
7. Frequency range should be 10  $\mu$ Hz to 5 MHz or more.
8. All the channels should have EIS facility.
9. AC amplitude: 1 mV to 2 V peak to peak or better
10. Bandwidth of electrometer should be 6 MHz or better
11. Electrode configuration: 2,3,4
12. Interface: USB/Ethernet

## **Comprehensive software package with the following software and techniques should be provided along with the system.**

1. Pulse software including DPV, NPV, RNPV and SWV etc.
2. Fuel cell and super capacitor testing softwares that includes impedance measurements facility, constant load discharge, constant current and constant power
3. Corrosion software including LPR and Tafel etc.
4. Impedance spectroscopy software which includes Impedance vs. Time, Potential, Bode Impedance and Nyquist Impedance etc.
5. Photovoltaic/Battery testing software including I-V measurements
6. Voltammetry software including CV and LSV etc.
7. Equivalent fitting circuit software
8. Analysis tools for corrosion, CV, Battery, Impedance with 2D and 3D view is required.

2

### **Other Accessories**

Small volume electrochemical cell with platinum electrode, Ag-AgCl/Calomel reference electrodes, glassy carbon working electrode, platinum working electrode and screen printed electrode Pt (100 numbers) with electrode holder.

### **Training**

On-site training for the operation of the hardware and software systems should be included.

### **Warranty**

Minimum 2 years with 1 or 2 year free service will be preferred

### **Data Acquisition System**

A suitable PC compatible for the above instrument control and another PC for post data analysis should be supplied along with the instruments. The PC should meet the minimum requirements such as desk top with i-5 or i-7 Processor, 2GB or more RAM, HD 500GB or more, Windows 7 Home basic and 21" LED Monitor.

Signature