

**PROJECT TITLE: Development of nanostructures using alumina (Al<sub>2</sub>O<sub>3</sub>) templates for photocatalytic and sensor applications**

**REQUIREMENTS**

To achieve this project and to bring about various applications along with articles in reputed high impact factor Q1 journals, there are couple of equipment's required.

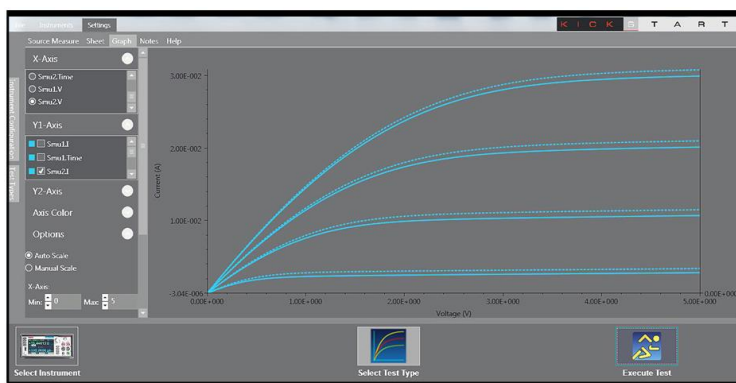
This required equipment's along with their information and justification is given below.

**Keithley Potentiostat (2450-EC) (Quotation attached)**

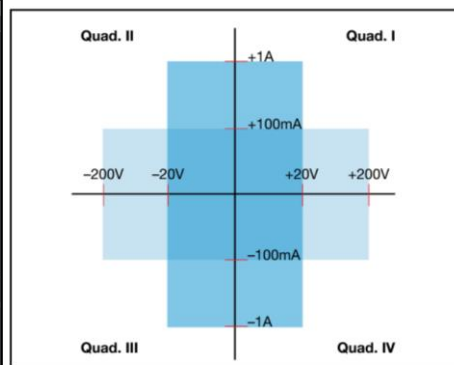


*Figure 1 Keithley Potentiostat 2450-EC*

The 2450-EC Electrochemistry Lab System is Keithley's low cost alternative to traditional electrochemistry potentiostats. The 2450-EC brings speed, flexibility, and simplicity right to your fingertips. Its innovative graphical user interface (GUI) and advanced, capacitive touchscreen technology allow intuitive usage and minimize the learning curve to enable researchers, scientists, and students to learn faster, work smarter, and invent easier. The 2450-EC is a versatile instrument, particularly well-suited for research and development in fundamental electrochemical lab research, characterizing the next generation of materials and electrolytes, new energy storage devices, and faster, smaller sensors.



With KickStart start-up software, users are ready to take measurements in minutes.



2450-EC power envelope.

**Figure 2** Kickstart software interface (Left); 2450-EC power envelope [working range] (Right)

While potentiostats are excellent instruments for electrochemistry applications, they typically lack any front panel display and control knobs, often are 2-quadrant systems only, and must be completely controlled by a computer with software that is not always open for users to customize tests beyond what the software can do. Keithley's 2450-EC is a smart alternative as a DC/low frequency potentiostat. The 2450-EC has features that, in many cases, can perform as well as a potentiostat at lower cost including a wide range of voltages and currents for sourcing or measuring, nV / fA sensitivities, and high impedance sense leads with a typical input resistance of 50G ohms and only 1pA of input bias current, typically acceptable with a wide variety of reference electrodes. The 2450-EC can run internal application test scripts so electrochemistry measurements can be run without the use of an external computer. Results (graphs) are immediately displayed right on the instrument front panel touchscreen. Connecting the 2450-EC to a 2-, 3-, or 4-electrode cell to perform the same tests as a potentiostat is simple with the included translation cable.

## Specification

### Voltage Specifications<sup>1,7</sup>

		Source		Measure <sup>2</sup>		
Range	Resolution	Accuracy (23° ±5°C) 1 Year ±(% setting + volts)	Noise (RMS) (<10Hz)	Resolution	Input Resistance	Accuracy (23° ±5°C) 1 Year ±(% rdg. + volts)
20.00000 mV	500 nV	0.100% + 200 μV	1 μV	10 nV	>10 GΩ	0.100% + 150 μV
200.0000 mV	5 μV	0.015% + 200 μV	1 μV	100 nV	>10 GΩ	0.012% + 200 μV
2.000000 V	50 μV	0.020% + 300 μV	10 μV	1 μV	>10 GΩ	0.012% + 300 μV
20.00000 V	500 μV	0.015% + 2.4 mV	100 μV	10 μV	>10 GΩ	0.015% + 1 mV
200.0000 V	5 mV	0.015% + 24 mV	1 mV	100 μV	>10 GΩ	0.015% + 10 mV

### Current Specifications<sup>1,7</sup>

		Source		Measure <sup>2</sup>		
Range	Resolution	Accuracy (23° ±5°C) <sup>3</sup> 1 Year ±(% setting + amps)	Noise (RMS) (<10Hz)	Resolution	Voltage Burden	Accuracy (23° ±5°C) 1 Year ±(% rdg. + amps)
10.00000 nA <sup>4</sup>	500 fA	0.100% + 100 pA	500 fA	10 fA	<100 μV	0.10% + 50 pA
100.0000 nA <sup>4</sup>	5 pA	0.060% + 150 pA	500 fA	100 fA	<100 μV	0.060% + 100 pA
1.000000 μA	50 pA	0.025% + 400 pA	5 pA	1 pA	<100 μV	0.025% + 300 pA
10.00000 μA	500 pA	0.025% + 1.5 nA	40 pA	10 pA	<100 μV	0.025% + 700 pA
100.0000 μA	5 nA	0.020% + 15 nA	400 pA	100 pA	<100 μV	0.02% + 6 nA
1.000000 mA	50 nA	0.020% + 150 nA	5 nA	1 nA	<100 μV	0.02% + 60 nA
10.00000 mA	500 nA	0.020% + 1.5 μA	40 nA	10 nA	<100 μV	0.02% + 600 nA
100.0000 mA	5 μA	0.025% + 15 μA	100 nA	100 nA	<100 μV	0.025% + 6 μA
1.000000 A	50 μA	0.067% + 900 μA	3 μA	1 μA	<100 μV	0.03% + 500 μA

## Justification

### Available setup

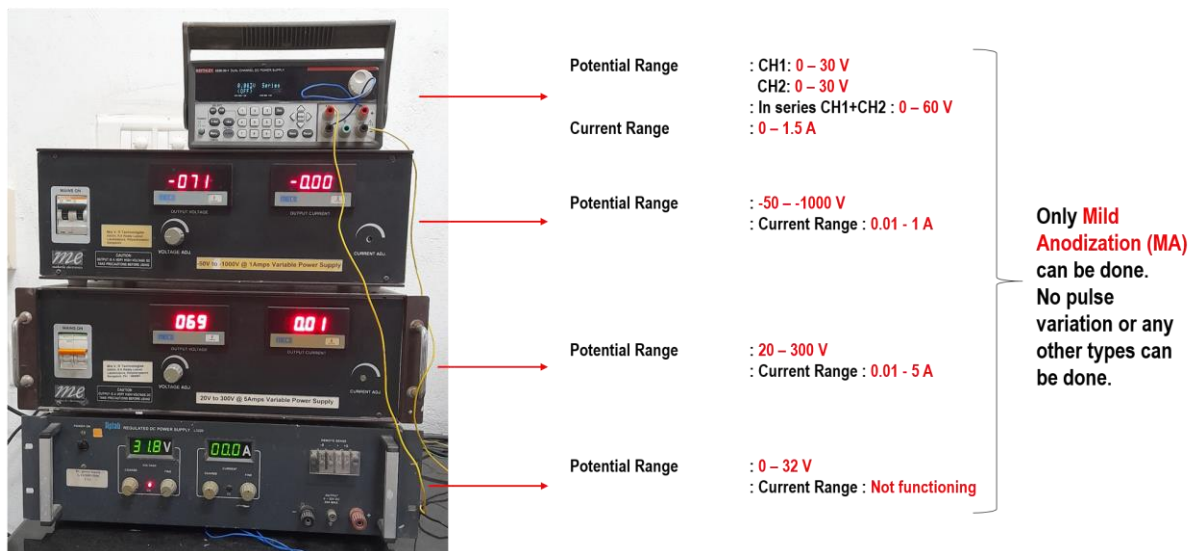
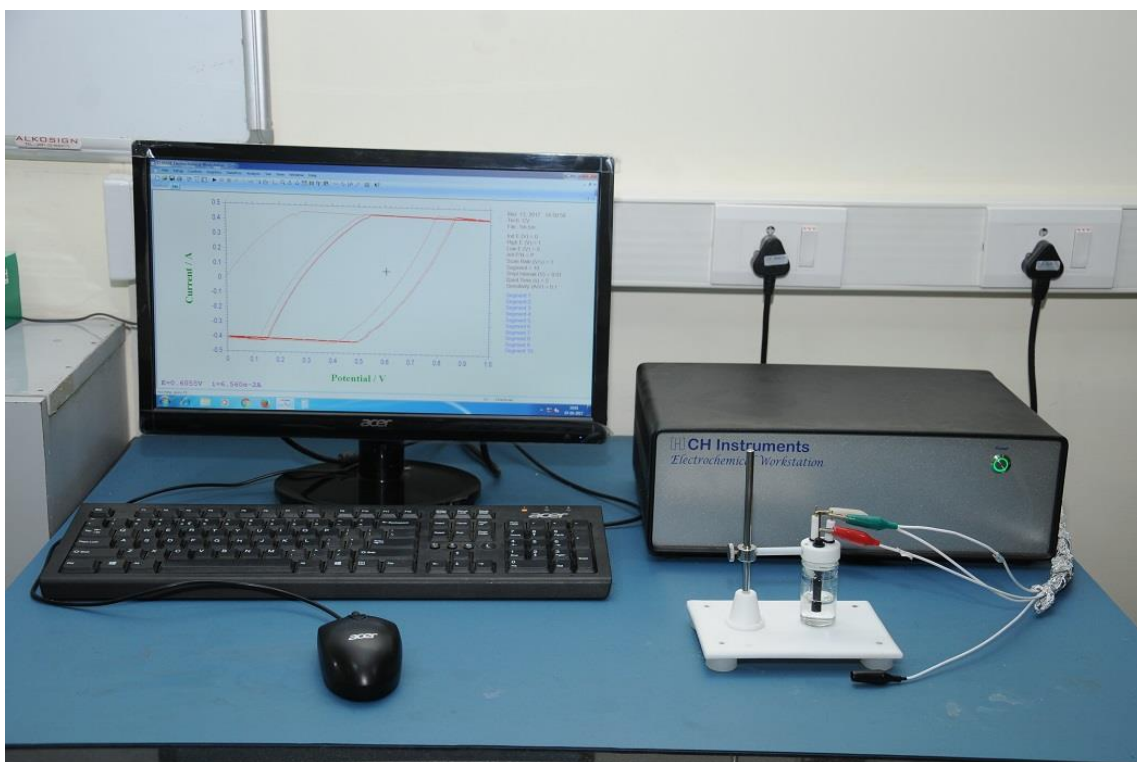


Figure 3 Currently available setup in our lab

Above mentioned is the currently available setup in the research lab (NML). As clearly mentioned in Fig.??, only a linear potential is achievable in the given setup (300 V without precise current [5 A] and 60 V with precise current [1.5 A]). Thus only Mild Anodization is

possible, no variable current with respect to potential can be initiated and no pulse variation can be carried out to develop AAO templates on substrates with modified nanochannels. Thus the need of the Keithley 2450-EC potentiostat is high. In addition to varied anodization, if procured, the equipment can also be used to carry out highly sensitive resistance vs time studies in a two or four probe system for gas sensing for vapour gases. It can be used to study the I-V characteristics of a perovskite solar cells layer ( $\text{FAPbI}_3/\text{MAPbI}_3$ ) and also the study the switching application of tellurium based chalcogenide glasses (Se-Te-In). Thus, the equipment can be used for not only for anodization but also for the study of all the applications currently carried out by the scholars in the lab.

**CH Instruments Electrochemical Analyzer/Workstation (CHI608E/CHI660E)**  
*(Quotation included)*



*Figure 4 CH Instruments Electrochemical Workstation/Analyzer*

The Model 600E series is designed for general purpose electrochemical measurements. The system contains a fast digital function generator, a direct digital synthesizer for high frequency AC waveforms, high speed dual-channel data acquisition circuitry, a potentiostat, and a galvanostat (available only in select models). The potential control range is  $\pm 10$  V and the current range is  $\pm 250$  mA. The instrument is capable of measuring current down to picoamperes. The instrument is very fast. The function generator can update at a 10 MHz rate.

Two high speed and high resolution data acquisition channels allow both current and potential (or an external voltage signal) to be sampled simultaneously at a rate of 1 MHz, with 16-bit resolution. The instrument provides a very wide dynamic range of experimental time scales. For instance, the scan rate in cyclic voltammetry can be up to 1000 V/s with a 0.1 mV potential increment or 5000 V/s with a 1 mV potential increment. The potentiostat / galvanostat uses a 4- electrode configuration, allowing it to be used for liquid/liquid interface measurements, and eliminating the effect of the contact resistance of connectors and relays for high current measurements. The data acquisition systems also allow an external input signal (such as spectroscopic) to be recorded simultaneously during an electrochemical measurement.

The instrument is capable of a wide variety of electrochemical techniques, and is available with integrated simulation and fitting software functions for both impedance and cyclic voltammetry. These features provide powerful tools for both electrochemical mechanistic studies and trace analysis.

### **Specification**

#### **Potentiostat:**

• Zero resistance ammeter • 2- or 3- or 4-electrode configuration • Floating (isolated from earth) or earth ground • Maximum potential:  $\pm 10$  V • Maximum current:  $\pm 250$  mA continuous,  $\pm 350$  mA peak • Compliance Voltage:  $\pm 13$  V • Potentiostat rise time:  $< 1$   $\mu$ s, 0.8  $\mu$ s typical • Potentiostat bandwidth (-3 dB): 1 MHz • Applied potential ranges:  $\pm 10$  mV,  $\pm 50$  mV,  $\pm 100$  mV,  $\pm 650$  mV,  $\pm 3.276$  V,  $\pm 6.553$  V,  $\pm 10$  V • Applied potential resolution: 0.0015% of potential range • Applied potential accuracy:  $\pm 1$  mV,  $\pm 0.01\%$  of scale • Applied potential noise:  $< 10$   $\mu$ V rms • Measured current range:  $\pm 10$  pA to  $\pm 0.25$  A in 12 ranges • Measured current resolution: 0.0015% of current range, minimum 0.3 fA • Current measurement accuracy: 0.2% if current range  $\geq 1e-6$  A/V, 1% otherwise • Input bias current:  $< 20$  pA

#### **Galvanostat:**

• Galvanostat applied current range: 3 nA – 250 mA • Applied current accuracy: 20 pA  $\pm 0.2\%$  if  $> 3e-7$ A,  $\pm 1\%$  otherwise • Applied current resolution: 0.03% of applied current range • Measured potential range:  $\pm 0.025$  V,  $\pm 0.1$  V,  $\pm 0.25$  V,  $\pm 1$  V,  $\pm 2.5$  V,  $\pm 10$  V • Measured potential resolution: 0.0015% of measured range

#### **Electrometer:**

• Reference electrode input impedance:  $1e12$  ohm • Reference electrode input bandwidth: 10 MHz • Reference electrode input bias current:  $\leq 10$  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 • External signal recording channel at maximum 1 MHz sampling rate

**Experimental Parameters:**

- CV and LSV scan rate: 0.000001 to 10,000 V/s • 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  $\mu$ s • True integrator for CC • DPV and NPV pulse width: 0.001 to 10 sec • SWV frequency: 1 to 100 kHz • i-t sample interval: minimum 1  $\mu$ s • ACV frequency: 0.1 to 10 kHz • SHACV frequency: 0.1 to 5 kHz • FTACV frequency: 0.1 to 50 Hz, simultaneously acquire 1st, 2nd, 3rd, 4th, 5th, and 6th harmonics ACV data • IMP frequency: 0.00001 to 1 MHz • IMP amplitude: 0.00001 V to 0.7 V rms

**Other Features:**

- Automatic and manual iR compensation • Current measurement bias: full range with 16-bit resolution, 0.003% accuracy • Potential measurement bias:  $\pm 10$ V with 16-bit resolution, 0.003% accuracy • External potential input • Potential and current analog output • Programmable potential filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • Programmable signal filter cutoff: 1.5 MHz, 150 KHz, 15 KHz, 1.5 KHz, 150 Hz, 15 Hz, 1.5 Hz, 0.15 Hz • RDE control output (Model 630E and up): 0-10V (corresponding to 0-10000 rpm), 16-bit, 0.003% accuracy • Digital input/output lines programmable through macro command • Flash memory for quick software update • Serial port or USB port selectable for data communication • Cell control: purge, stir, knock • CV simulation and fitting program, user-defined mechanisms • Impedance simulation and fitting program • Maximum data length: 256K-16384K selectable • Dimensions: 14.25”(W)  $\times$  9.25”(D)  $\times$  4.75”(H) • Weight: 12 lb.

**Justification**

With the growing trend in the research field, the need to pursue current topics is of greater need. This equipment mentioned above will help use to explore various possibilities in the field of energy storage and harvesting in a greater level.

This equipment if purchased, will allow us to deposit complex materials into the pores and bring about we'll designed nano arrays and it can also be used to study and examine materials for electrochemical water splitting (hydrogen production) from fresh water and also from sea water (main objective). It can also be used to study various energy based applications like supercapacitors, battery, supercapattery, bio sensor, fuel cells, carbon capture, photoelectrochemical degradation, photoelectrochemical water splitting, corrosion studies,

electrodeposition and so on along with gas sensing and photocatalysis making our project a much more versatile one.

These equipment will help us in evaluating the device fabricated and will help us in publishing papers in high impact factor Q1 journals as the need for research in energy harvesting and storage of renewable energy is very high.

These equipment will improve the standards of the research lab and will enable the students to try innovative ideas and subject them to test for bringing out quality research contributions to the society.

These equipment can also push the scholars in preparing devices and trying to publish patents and glorify the name of the institution.

# Quotations for the requested equipment's





**QUOTATION**

To <b>NITK</b> National Institute of Technology Karnataka, Srinivasnagar PO, Surathkal, Mangalore surathkal,Karnataka, India, 575025 Phone No. : 2474000  Kind Attn : Prof. N.K.Udayashankar, Head of Department, Physics	Quotation No. <b>609/2022</b> Buyer Ref. No. <b>Email &amp; discussion</b> Mode/Term of Payment <b>100% against delivery</b> Terms of Delivery <b>15 to 20 weeks</b>	Date <b>15/04/2022</b> Dispatch Through <b>Road</b> Validity <b>30 days</b> Incoterms <b>FOR</b>
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S.No	Part No	Description of Goods	HSN/SAC	Qty	Unit	Unit Rate(INR)	Total (INR)
1	2450-EC	<b>2450-EC POTENTIOSTAT</b>		1	Nos	7,75,000.00	7,75,000.00
2	KICKSTARTFL-SUITE	<b>License; KICKSTARTFL-SUITE for all base apps of KickStart 2.0; Floating</b>		1	Nos	86,700.00	86,700.00

<b>Sub Total</b>							8,61,700.00
<b>GST @ 5.000 %</b>							43,085.00
<b>Total</b>						<b>2</b>	<b>9,04,785.00</b>

**Amount Chargeable (in words) : INR Nine Lakh Four Thousand Seven Hundred Eighty Five Only**

**Warranty** 1 year. Warranty does not cover accessories, consumables, software etc. Accessories carry 90 days warranty.

**Payment** 100% against delivery.

**Delivery** 15 to 20 weeks from receipt of acceptable order.

**Order to be placed on:-**

**Convergent Technologies India Pvt Ltd.**

No. 13/1, 5th Block, Railway parallel Road  
Kumara Park West, 7th Cross, Central Street  
Bangalore -560 020. Ph: 080-46009933, 080-49668031, 080-23460180, 06363990944

email: [sales@convergenttech.in](mailto:sales@convergenttech.in)  
GST No: 29AAGCC4951P1ZZ

**For Convergent Technologies India Pvt Ltd**

Gururaj N  
Account Manager Mobile: 9844442074  
Email:gururaj@convergenttech.in

This is a Computer Generated Document, no signature required



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 Fax : 080-25615369  
 Mobile : 09341282569  
 Email : [bangalore@sinsil.in](mailto:bangalore@sinsil.in)

QUOTATION #NITK/CHI/22/04/037

Date: - April 13, 2022

Prof. N. K. Udayashankar  
 Head, Department of Physics  
 National Institute of Technology Karnataka  
 Surathkal – 575025

Sr. No	Model No.	Description	Unit Price (US\$)
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### CH Instruments Inc., USA

01.	CHI608E	<p>Electrochemical Workstation with Potentiostat/Galvanostat with Corrosion, Impedance, Electrochemistry s/w, and Latest Windows Based Acquisition s/w also includes power supply 220V/50Hz, Interface Cable for USB Port, Cell Cable, Manuals &amp; Installation.</p> <ul style="list-style-type: none"> <li>• Cyclic Voltammetry (CV)</li> <li>• <b>Linear Sweep Voltammetry Plots</b> Current – E, Linear Pol Res Solar Plot (<b>Isc, Voc, Pwr Max (W), FF, Voltage max (V)</b>) Power – E</li> <li>• <b>Tafel Plot (TAFEL), Linear Polarisation</b></li> <li>• Chrono Amperometry (CA)</li> <li>• Chrono Coulometry (CC)</li> <li>• Bulk Electrolysis with Coulometry (BE)</li> <li>• <b>AC Impedance (IMP) – 10uHz to 1MHz</b></li> <li>• <b>Impedance – Time (IMPT)</b></li> <li>• <b>Impedance – Potential (IMPE)</b></li> <li>• <b>Chronopotentiometry (CP)</b></li> <li>• <b>Chronopotentiometry with Current Ramp (CPCR)</b></li> <li>• <b>Multi-Current Steps (ISTEP)</b></li> <li>• <b>Potentiometer Stripping Analysis (PSA)</b></li> <li>• Open Circuit Potential – Time (OCPT)</li> <li>• Galvanostat</li> <li>• Limited version of CV simulator</li> <li>• Impedance Simulator</li> <li>• IR Compensation</li> <li>• External Potential Input</li> <li>• Auxiliary Signal Measurement Channel</li> </ul> <p><b>AC Impedance Plots</b></p> <ul style="list-style-type: none"> <li>• Bode : log Z vs log (freq)</li> <li>• Bode : Phase , vs log (freq)</li> <li>• Bode : log Z'' &amp; Z' vs log (freq)</li> <li>• Bode : log Y vs log (freq)</li> <li>• Nyquist ; Z'' vs Z'</li> <li>• 3D Plots</li> <li>• Admittance; Y'' vs Y'</li> <li>• Warburg: Z'' &amp; Z' vs <math>w^{1/2}</math> w-angular frequency</li> <li>• Z' vs w Z'', Z' vs Z''/w</li> <li>• Cot (phase) vs <math>w^{1/2}</math></li> </ul> <p><b>Tafel plot (TAFEL)</b> includes            Linear Polarisation, Pitting Corrosion, Noise Measurements, Corrosion current, Potentiodynamic deactivation etc</p>	12,095.00
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Mobile : 09341282569  
Email : [bangalore@sinsil.in](mailto:bangalore@sinsil.in)

02.	CHIXXX	Electrochemical Cell System includes, 4 glass cells with one Cell top Pt Working Electrode GC Working Electrode Ag/AgCl Reference (aq) Ag/AgCl Reference (non aq) Calomel Reference Electrode Pt Wire Counter Electrode Electrode Polishing Kit & Cell Stand*	950.00
03.	CHI-S/W	<b>Licensed &amp; Full version of software for Electrochemistry &amp; all the techniques of CHI6xxE.</b> <b>Software Features:</b> 32-bit Windows-based software, Multi-document interface Open, save, delete, list, conversion, and print files Run, macro, iR compensation, filtering, preconditioning, step functions, and cell control Data plot, overlay and parallel plots, Graphics options, color and font selections Smoothing, derivatives, integration, semi-derivative and semi-integral, interpolation, baseline fitting & subtraction, linear baseline correction, data point removing, data point modification, background subtraction, signal averaging, mathematical operation, Fourier spectrum Calibration curve, standard addition, data file report, concentration – time dependence report and plot. Digital simulation, user defined mechanisms Data information.	No-Charge
04.	CHI-S/W-UPG	<b>UPGRADATION OF SOFTWARE IS FREE OF COST FOR LIFETIME.</b>	No-Charge
05.	COMP	Desktop Computer with 1TB Hard Disc, 4GB RAM, 18.5” LED Monitor with Standard Configuration.	700.00

<b>Total Ex works, USA</b>	<b>13,745.00</b>
<b>Air Freight &amp; Insurance</b>	<b>500.00</b>
<b>Total CIP Bangalore</b>	<b>US\$ 14,245.00</b>

## Alternates for Item no.1

01.	CHI660E	Electrochemical Workstation with Potentiostat/Galvanostat with Corrosion, Impedance, Electrochemistry s/w, and Latest Windows Based Acquisition s/w also includes power supply 220V/50Hz, Interface Cable for USB Port, Cell Cable & Installation. <b>General Techniques</b> <ul style="list-style-type: none"> <li>• Cyclic Voltammetry (CV) with simulation/fitting programs</li> <li>• Linear Sweep Voltammetry (LSV) with stripping</li> <li>• Bulk Electrolysis with Coulometry (BE)</li> </ul> <b>Trace Metal analysis &amp; Pulse Techniques</b> <ul style="list-style-type: none"> <li>• Differential Pulse Voltammetry (DPV) with stripping</li> <li>• Normal Pulse Voltammetry (NPV) with stripping</li> <li>• Square Wave-Osteryoung Voltammetry (SWV) with stripping</li> </ul> <b>Corrosion</b> <ul style="list-style-type: none"> <li>• Tafel Plot (TAFEL), potentiodynamic deactivation, pitting corrosion, corrosion rate, linear Polarisation, Corrosion current etc.</li> </ul>	16,620.00
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## **Fuel cell**

- Multi-Potential Steps (STEP)
- Multi-Current Steps (ISTEP)
- Amperometric i-t Curve (i-t) – Lifetime testing
- Polarisation I-V curves Linear Sweep
- Open Circuit Potential – Time (OCPT)

## **Impedance**

- AC Impedance (IMP)
- Impedance – Time (IMPT) (Mott-Scottsky)
- Impedance – Potential (IMPE)
- Impedance Simulator with fitting
- Open Circuit Potential – Time (OCPT)

## **AC Impedance Plots with Simulation**

- Bode : log Z vs log (freq)
- Bode : Phase, vs log (freq)
- Bode : log Z'' & Z' vs log (freq)
- Bode : log Y vs log (freq)
- Nyquist ; Z'' vs Z'
- Admittance; Y'' vs Y'
- Warburg: Z'' & Z' vs  $\omega^{1/2}$  w-angular frequency
- Z' vs  $\omega Z''$
- Z' vs Z''/ $\omega$
- Cot (phase) vs  $\omega^{1/2}$

## **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**

I-V measurements, I max, Pmax, Fill factor etc

## **In situ Spectroelectrochemical study (optional)**

- Transmission mode for ITO plates or Pt grid, Reflection mode for Pt/GC electrodes & Dip probe for coulometrically generated species

## **General Useful Techniques**

- Chrono Amperometry (CA)
- Chrono Coulometry (CC)
- AC Voltammetry (ACV) with stripping
- Differential Normal pulse Voltammetry (DPNV) with stripping
- Second Harmonic AC Voltammetry (SHACV) with stripping
- Differential Pulse Amperometry (DPA)
- Double Differential Pulse Amperometry (DDPA)
- Triple Pulse Amperometry (TPA)
- Integrated Pulse Amperometry Detection (IAPD)
- Hydrodynamic Modulation Voltammetry (HVM)
- Sweep-Step Functions (SSF)



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Email : [bangalore@sinsil.in](mailto:bangalore@sinsil.in)

	<ul style="list-style-type: none"><li>• Chronopotentiometry with Current Ramp (CPCR)</li><li>• Potentiometric Stripping Analysis (PSA)</li><li>• Staricase Voltammetry (SCV) with stripping</li><li>• Auxiliary Signal Measurement Channel</li><li>• RDE control (0-10V output)</li><li>• IR Compensation</li><li>• External Potential Input</li></ul>	
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## Alternates for item no.2

<b>01.</b>	<b>CHIXXX</b>	Electrochemical Cell System includes, 4 glass cells with Two Cell top, Pt Working Electrode - <b>3 No.s</b> GC Working Electrode - <b>3 No. s</b> Ag/AgCl Reference (aq) - <b>3 No. s</b> Ag/AgCl Reference (non aq) - <b>3 No. s</b> Calomel Reference Electrode - <b>3 No. s</b> Pt Wire Counter Electrode - <b>3 No. s</b> Electrode Polishing Kit	<b>2,500.00</b>
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## Optional Accessories

<b>01.</b>	<b>CHI 200B</b>	PicoAmp booster and faraday (upto 1 pA operation for low current measurability)	<b>1,045.00</b>
<b>02.</b>	<b>CHI 680C</b>	AmpBooster upto 2 Amps for higher current measurement	<b>2,495.00</b>
<b>03.</b>	<b>CS-3A</b>	<b>Cell stand with Faraday Cage with SVC-3.</b> Input gas line connection is easy and quick. Manual or Remote on-off control of gas purge-blanket. Manual control of gas purge-blanket rate. Manual or remote on-off control of magnetic stirrer. Adjustments of magnetic stirrer rate are controlled manually. Voltammetry cell cap. Small volume glass cell vials. Mounted cell top compatible with electro-chemical accessories. The SVC-3 cell comes with one counter electrode, one Teflon cap and 7 glass vials. By using this cell user can run experiments free from gasification steam. Also researchers can get rid of influence of oxygen in the cell by bubbling nitrogen gas. This SVC-3 feature is well suited for measurement of ultra-weak current.	<b>2,900.00</b>



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## **Terms & Conditions:** -

01. PO: In favour of CH Instruments Inc., USA through Sinsil International Pvt Ltd.
02. Payment: Wire Transfer In favour of CH Instruments Inc., USA  
**Address:** -  
CH Instruments, Inc.  
3700 Tennon Hill Drive, Austin, TX 78738, USA  
Tel: (512) 402-0176, Fax: (512) 402-0186  
E-mail: [info@chinstruments.com](mailto:info@chinstruments.com)  
**Bank Details:** -  
Swift code : CHASUS33  
ABA # : 111000614  
Account Number : 265755839  
Account Name : CH Instruments, Inc.  
Bank Name : JPMorgan Chase Bank, N.A.  
12222 Research Blvd  
Austin, TX 78759 U.S.A.  
Tel: (512) 219-4452
03. Validity : 90 days.
04. Delivery : 6 - 8 Weeks.
05. Warranty : 1 year.
06. Customs Duty & Clearance Charges are as applicable & are borne by the purchaser.
07. Computer System & Cell Stand to be supplied by Sinsil International locally.
08. Installation is done by Sinsil International Engineers.
09. There is no element of agency commission is involved in this quotation.

## **For SINSIL INTERNATIONAL PVT LTD.**

**Vijaykumar B**  
**Sales & Service Engineer**  
**9591360386**



# **SINSIL INTERNATIONAL PVT LTD**

No.31, Opposite S.J.E.S College  
Old Madras Road, Medahalli  
Virgonagar Post, Bengaluru – 560 049  
www.sinsilinternational.com

Telephone : 080-50891594  
Fax : 080-25615369  
Mobile : 09341282569  
Email : [bangalore@sinsil.in](mailto:bangalore@sinsil.in)

**Date: - April 13, 2022**

Prof. N. K. Udayashankar  
Head, Department of Physics  
National Institute of Technology Karnataka  
Surathkal – 575025

Dear Sir / Madam,

Thank you for your Enquiry,

As per your request enclosed please find the quotation for,

## **CH Instruments Inc., USA, Electrochemical Workstation with EIS.**

Kindly go through the same and get back to us for any further information / clarifications.

Thanking you and assuring you of our best attention and services all the time.

**For SINSIL INTERNATIONAL PVT LTD.**

**Vijaykumar B**  
**Sales & Service Engineer**  
**9591360386**