Potentiostat-Galvanostat capable of performing IPCE, Intensity modulated photocurrent spectroscopy (IMPS), Intensity modulated photovoltage spectroscopy (IMVS), IV curve measurements with suitable accessories

ELECTROCHEMICAL WORKSTATION with EIS Module

Compliance Voltage: ±14V or more
Max. Current: up to ±2A or more
Minimum current range: 10nA or less
Electrometer Bandwidth: >5 MHz
Input impedance: $\geq 10^{13}$ Ohms
Potential ranges: ±1V, ±2V, ±4V, ±10V; ±20V or more
Applied Potential resolution: <160 µV
Measured potential resolution: <5 µV
Current resolution: 30fA or less
Frequency Range: 10µHz to 1 MHz or more
Amplitude: 1mV to 300mV or more
Accuracy of applied current ±2% or less in the current range below 100mA, and preferably same accuracy in other current range also
Input impedance of the electrometer >1T ohm and 8pF or less
Frequency resolution: 0.003% or less
Frequency accuracy: 0.003% or less
Signal type: 1 sine is must, multiple sine is preferable
ADC/DAC resolution: 18 bit or high
Impedance range: 30 µ Ohm to 1G Ohms
Free data presentation and calculation software capable of showing Nyquist, Bode, Admittance, Dielectric, Mott-Schottky, Fit and Simulation, Find Circle, Element Substraction, Kramers-Kronig.

Accessories

Test Cell for solar cell testing
Cable and necessary connectors to connect the accessories to the potentiostat/galvanostat
Full spectrum Xenon Lamp 150W with integrated shutter with 1.5 AM filter or with a spectral match to 1.5AM filter. This lamp should show a temporal stability of 1% RMS and should be classified as Class A or higher. One spare lamp.
Minimum collimated beam dia of 25mm and illuminated field dia of 25mm
For IPCE testing, a photo diode sensor in the feed-back circuit is preferable (for intensity control)
Light sources: White light, LEDs in the wavelength of 470 nm, 505nm, 530nm, 590nm, 617nm, 627 nm (the supplier of light sources with highest intensity from these sources is preferable)
Provision with scanning monochromator with the resolution of 40nm or less is also preferable
Photoelectrochemical cell suitable for both solid and liquid samples with 15mm or higher dia quartz window, ITO glass, Pt counter electrode, Ag/AgCl reference electrode, spare O-rings and gaskets.

Test techniques

Analytical Voltammetry techniques, Pulse voltammetry techniques, Coulometry techniques, Chrono techniques, Corrosion measurement & analysis, Electrochemical Impedance spectroscopy, Battery testing, Super capacitor testing, Fuel cell testing,Advanced Impedance simulation and fitting facility, IV characteristics, Voc, Isc, Jsc, Vmax, Imax, Pmax, IVMS, IMPS, IPCE, and most of the common electrochemical techniques etc

Solar Cell Fill-Factor, Efficiency, Maximum Power, OCP, ISC; Controlled Intensity Modulated Photocurrent Spectroscopy; Controlled Intensity Modulated Photovoltage Spectroscopy; Charge Extraction After N. W. Duffy, L. M. Peter et. al.; Light Transient Measurements. Chopped Light Voltammetry; DC vs. Intensity Transfer Functions, Time Domain Measurements; Quantum Efficiency, Incident Photon to Charge Carrier Efficiency.

Potentiostat/galvanostat controllable with software installed in computer running in Windows 7 or 8 platform and preferably in 64 bit machine

These instruments should be one of the latest model with the provision to expand with additional attachments/modules aiming different kind of studies in the future.