iviumSoft: One software to control all ivium instruments

- Free: included with all ivium instruments
- Unlimited number of installs
- All applications
- All standard electrochemical techniques
- Complete data analysis options
- Advanced data archiving

### Sweep techniques

- Linear sweep & cyclic voltammetry
- Potentiostatic or galvanostatic
- Stability or Current Averaging
- True Linear Scan (optional)
- Scan rate: 1µV/s to 10,000 V/s
- Ohmic drop correction
- Simultaneous recording of WE2 (Bipotentiostat optional)
- Simultaneous data acquisition from peripheral port
- Alpha control of digital step sample point
- Dynamic vertices

### Transients

**CHRONOPOTENTIOMETRY & CHRONOAMPEROMETRY**
- 1 to 255 levels definable at 0.125 µs resolution
- Minimum interval time 10 µs
- Ohmic drop correction
- Simultaneous recording WE2 (Bipotentiostat optional)
- Simultaneous acquisition from peripheral port
- Dynamic level-switching at definable potential values
- Sequences may be repeated up to 65535 cycles or unlimited

**MIXED MODE:**
- Sequences up to 255 stages can be applied with definable electrical modes:
  - Potential step/step
  - Current step/step
- Real time Impedance measurements: Frequency range: 10Hz-8MHz. Resistance and Capacity can be monitored during all step and sweep stages, simultaneously with E and I measurements.
- The start potential of a stage may be defined as an absolute potential or relative to the last potential of the previous level.
- Sample interval: 0.002s
- User definable level termination criteria, incl.: E>, E<, I>, I<, dE/dt>, dE/dt<, dI/dt>, dIdt<, An1>, I_fraction<, |Q|, etc.
- Sequence repetition up to 65535 cycles or continuously

### ECN: ELECTROCHEMICAL NOISE

Noise measurements are performed with 2 identical working electrodes and a reference electrode.

- ECN option is standard, no extra hardware required.
- Potential and current are recorded up to 500 pts/s.
- Integrated Corrosion analysis software will calculate the relevant parameters automatically:
  - Time-domain analysis: corrosion current, pitting/localization index, corrosion resistance.
  - FFT Frequency analysis: Fourier current and potential spectra, impedance spectra and corrosion resistance.
  - IMR Frequency analysis: Maximum Entropy Method with definable number of model coefficients
- 6 window functions & baseline subtraction available

### Impedance measurements

- Single sin/multi sin
- Combined frequency and potential scans: Mott-Schottky plots
- Up to 255 frequencies per scan
- Dual 16 bit ADC with 1-10µV proton amplifiers
- Automatically sized filters
- DC subtraction: analog or 16 bit offset DACs
- Integrated data analysis

### Corrosion techniques

- E oc monitor
- Polarisation Resistance
- Tafel Plot
- Potentiodynamic
- Cyclic Polarisation
- Galvanic Corrosion
- Corrosion Rate Monitor

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**THE NETHERLANDS:**
Ivium Technologies B.V.
De Zaale 11
5612 AJ Eindhoven
The Netherlands

tel. +31 40 2390600
fax. +31 40 2390601
e-mail info@ivium.com
www.ivium.com

**U.S.A.:**
Ivium Technologies USA
90590 Galaxy Blvd., Suite 301D
Fernandina Beach, FL 32034

phone: 800-303-3885 (toll free) / 904-310-9060 (office)
fax: 904-310-9068
e-mail pete@ivium.us
www.ivium.us

contact: Dr. Pete Peterson

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Analysis

- **GRAPHICAL EQUIVALENT CIRCUIT EDITOR FOR FITTING IMPEDANCE DATA**
- **PEAKFIND AND BASELINE SUBTRACTION**
- **SOLAR CELL REPORT**
- **CURVE FIT**

GRAPHICAL EQUIVALENT CIRCUIT EDITOR FOR IMPEDANCE DATA

- Any element from the top toolbar can be selected and dropped on the circuit grid. R, C, L, W, Q, O, G.
- Alternatively, a CDC equation can be entered, manually or from a predefined list.
- Start values may be entered by operator or can be calculated automatically.
- Fit parameters manual override.
- The software will calculate the best fitting set of parameters with the Levenberg-Marquardt technique.
- Fitting can be optimized by selection of source data (Z' / Z" / Zabs / phase), assigning error weight and/or fit parameter constraints.

PEAKFIND AND BASELINE SUBTRACTION

- Fully automatic search, or manually assisted by mouse-drag.
- Construct whole peaks, or front or rear flanks.
- Peak-finding method using 1st or 2nd derivative function.
- Definable minimum peak height and peak width.
- Adjustable peak-finding sensitivity.
- Integrated variable smoothing.
- Automatic baseline subtraction.
- Manually assisted baseline subtraction with 9th degree polynomial or exponential fitted baseline curves.

SOLAR CELL REPORT

- Automatic solar cell evaluation.
- Basic/Advanced model.
- All relevant solar cell parameters, incl. Jsc, Isc, Voc, EOC, Rs, Rp.

Tools

- User-definable colors, linestyles, datamarkers, autoscale / manual scaling, axis grid.
- 3D option: datasets with 3 variables may be plotted in a 3-dimensional projection.
- Zooming in on details by mouse-click & drag.
- 2nd vertical axis for simultaneous display of 2 data sets, phase angle or other parameters.
- Optional 2nd graph, instead of 2nd vertical axis.
- Numerical data plotted in graph.
- Individual scans selectable for operations.
- Previously stored scans can be overlaid.

Special functions

- **GRAPHIC PRESENTATION**
- **TOOLS**
- User-definable colors, linestyles, datamarkers, autoscale / manual scaling, axis grid.
- 3D option: datasets with 3 variables may be plotted in a 3-dimensional projection.
- Zooming in on details by mouse-click & drag.
- 2nd vertical axis for simultaneous display of 2 data sets, phase angle or other parameters.
- Optional 2nd graph, instead of 2nd vertical axis.
- Numerical data plotted in graph.
- Individual scans selectable for operations.
- Previously stored scans can be overlaid.

**BATCH MODE FOR AUTOMATED SEQUENCES**

- The operator can automate complex measurement sequences, and interface to external equipment for process automation.
- Automatic loading and execution of method files.
- Create loops for repetitive tasks, loops may be nested.
- Modify selected parameters at each pass inside a loop.
- Switch the multiplexer to fixed channels or to the loop index variable.
- Set the digital and analog outputs.
- Wait for a 1s or 10s level on the digital input.
- Set delays & scheduling tasks.

The BatchEditor has a graphical user interface, that allows quick and easy sequence generation.