SPELECNIR

SPELECNIR is the only **fully-integrated equipment** in the market dedicated to **near-infrared (NIR) spectroelectrochemistry**. One portable box (25 x 24 x 11 cm) integrates all components required: (Bi)potentiostat/Galvanostat (± 4 V potential range, ± 40 mA maximum measurable current), tungsten-halogen lamp as light source and the spectrometer (900–2200 nm), facilitating the performance of this kind of measurements to everyone.

SPELECNIR offers **3 instruments in only 1**: aside of spectroelectrochemical measurements, the equipment can also be independently used as a (Bi)potentiostat/ Galvanostat or as NIR spectroscopic instrument.

SPELECNIR is **synonymous with synchronization**: optical and electrochemical responses are perfectly synchronized, being simultaneous but independent (non-triggered) signals.

SPELEC instruments are based on the ***operando* concept**, making accessible time-resolved spectroelectrochemistry to everyone. During each measurement, the spectra are continuously recorded, providing the monitoring of the whole electrochemical reaction.

SPELECNIR is controlled by **DropView SPELEC**, the only software dedicated to spectroelectrochemistry, which provides powerful functions such as:

- Shutter lamp control (automatic dark and reference spectra).
- Real-time panel that collects the generated spectra not only during the electrochemical measurement but continuously at any time.
- Spectroscopic measurements shown in counts, absorbance, transmittance or reflectance during the electrochemical process.
- Plot of optical spectra vs. electrochemical curves at a specified wavelength (voltabsorptogram, chronoabsorptogram or derivated curves).
- Plot overlay, peak integration, smoothing, subtraction, derivative curve, baseline fitting.
- 3D plotting of curves.
- Export to .csv all synchronized data.

3 year
instrument warranty
Conditions apply

GENERAL SPECIFICATIONS

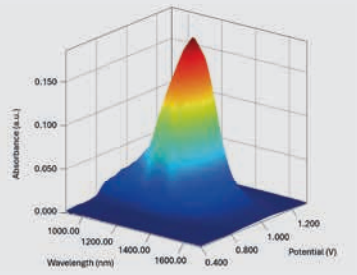
Power	5 V DC
PC interface	USB
LED indicator	Power
Dimensions	25 x 24 x 11 cm (L x W x H)
Weight	3,6 kg

ELECTROCHEMICAL SPECIFICATIONS

Operating modes	(Bi)potentiostat, galvanostat
Potential range	± 4V
Current ranges (potentiostat)	± 1 nA to ± 10 mA (8 ranges)
Maximum current	± 40 mA
Current ranges (galvanostat)	± 100 mV, ± 1 A (2 ranges)
Applied potential resolution	1 mV

OPTICAL SPECIFICATIONS

Light source	
Lamps	Tungsten-halogen
Wavelength range	400-2500 nm
Stability	< +/-25 .10^{-6} AU
Drift	< 5.10^{-4} AU/h
Warm-up time	≈ 8 min
Numerical aperture	≈ 0.41
Lifetime	≈ 2000 hours
Fiber connector	SMA 905
Spectrometer	
Detector	InGaAs linear array
Pixels	256
Pixel size	50 µm x 250 µm
Pixel well depth	≈ 62,500 electrons
Fiber connector	SMA 905
Wavelength range	900-2200 nm
Optical resolution	≈ 17.9 nm FWHM
Signal-to-noise ratio	10000:1 (at 100 ms integration time)
A/D resolution	16 bits
Dark noise	6 RMS counts at 100 ms; 12 RMS counts at 250 ms
Dynamic range	15 x 10^6 (system); 10000:1 for a single acquisition
Integration time	1 ms to 2 s
Corrected linearity	> 99.8 %



SPELECNIR can be used with any kind of electrodes cells. Metrohm DropSens offers innovative cells for conventional electrodes (REFLECELL-C) as well as for and screen-printed electrodes (REFLECELL, TRANSCELL, TLFCL-REFLECELL).

DISCOVER THE MAIN APPLICATIONS!