

# OLIS CPL SOLO

Exactly what a CPL spectrometer needs to be

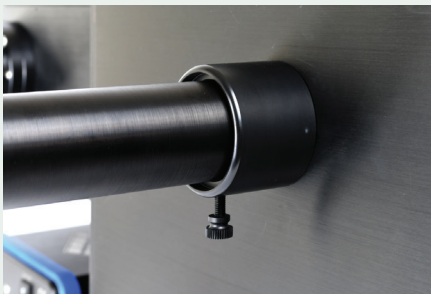
*The CPL Solo is the only commercial spectrometer designed on first principle for circularly polarized luminescence.*

**It's perfect on every front.**

- ✓ **Maximum Excitation**  
using brilliant, stable filtered LEDs
- ✓ **Collects Polarization of Fluorescence**  
and optionally phosphorescence lifetime
- ✓ **Scanning Emission**  
using a single grating monochromator
- ✓ **Costs 50% Less than Other Commercial Models**  
No xenon arc lamp, double monochromator, or lock-in amplifier
- ✓ **Highest Sensitivity Detection**  
with photon counting
- ✓ **50-80% Smaller than All Other Commercial Models**  
Before computer, measures only 55 cm x 55cm
- ✓ **Digital Acquisition of True IL and IR**  
correct calculation and presentation of GLUM

## Maximum Excitation

The full intensity of a wavelength specific LED is millimeters from the sample, providing greater intensity than anything other than a laser. A filter is added to narrow the bandpass of certain wavelengths. OLIS electronics hold the intensity stable.



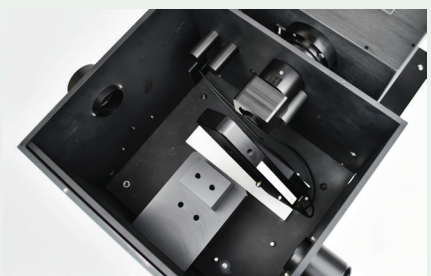
### LED as excitation source

- Wavelength specific LED with high intensity and stability.
- Most are filtered to reduce the bandwidth to  $\pm 5$  nm.
- The filtered LED and controlling electronics are within an LED Tube. Changing one LED Tube (wavelength A) to another (wavelength B) requires no tools, no alignment, and takes moments.
- The LED operates using OLIS electronics and computer control.



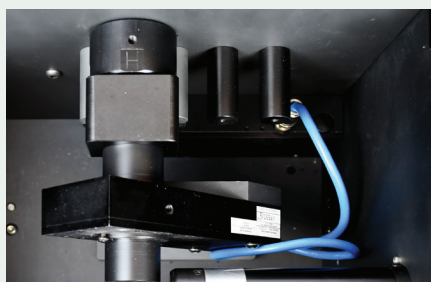
### Sample Holder Choices

- Ambient 1 cm<sup>2</sup> cuvette holder, included in system price.
- Peltier 1 cm<sup>2</sup> cuvette holder.
- Fixed angle thin film holder.
- Variable angle thin film holder, manual or computerized.
- Other, client specified.



### Photoelastic Modulator (PEM)

- Modules the left and right circularly polarized emission 50,000 times per second.
- Timing of data acquisition by OLIS software is synchronized to the modulator, so that every datum's exact state of polarization is known, eliminating the need for analog lock-in amplifier and pre-measurement settings.



### Polarizer(s), Emission and Optimal Excitation

- Ledges hold the polarizer before the sample (polarized excitation) and after the sample (polarized emission).
- Lift and move without tools.
- Holding notch for perfect positioning.

## Scanning Emission & Highest Sensitivity Detection

Default Vis/NIR or higher price UV/Vis single grating monochromator is mounted for fast and fail-safe interchange. The detector travels with the monochromator.



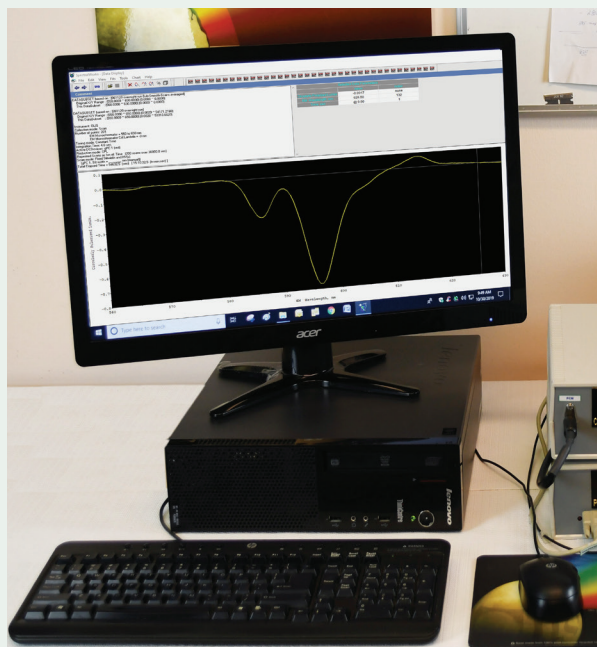
### Emission Monochromator

- Single grating for highest light throughput.
- Filter position for stray light reduction.
- 40 x 45 mm 1200 lines, blazed at 450 nm for 240-870 nm.
- 40 x 45 mm 1200 lines, blazed at 750 nm for 600-1600 nm.
- Motorized scanning with < 0.1 nm accuracy and scan rate > 40 nm/sec.

## Data acquisition from the CPL Solo is direct and absolute

Employing an entirely digital scheme dating to 1974. Patented in 2005.

### OLIS SpectralWorks software

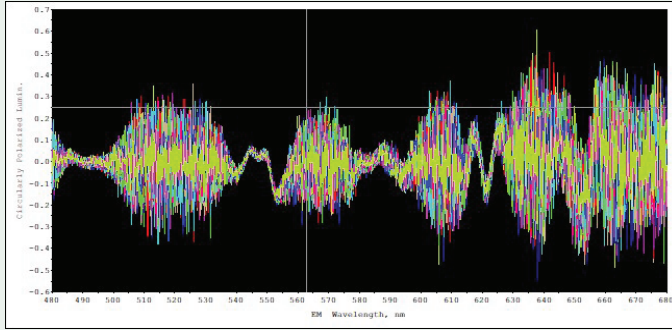


- All instrument settings for the CPL Solo hardware and accessories
- Intensity information (raw data) are read from the photon counter to an FPGA chip, where data are sorted by wavelength and polarization state  $I_L$  or  $I_R$ .
- Full digital data handling results in linearity over at least seven orders of magnitude, zero drift, and flat baseline
- Acquires and displays  $I_L$  and  $I_R$  signals and graphically plots

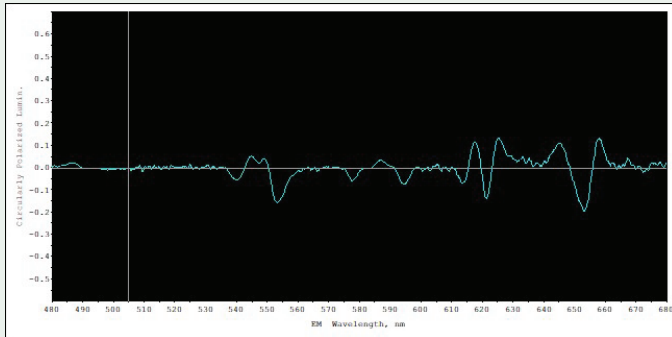
$$GLUM = 2 (I_L - I_R / I_L + I_R)$$

- Digital filtering for removing noise is available during pre-presentation processing and after. Filtering is reversible for user verification that no structural information was lost or distorted by random noise removal.
- Raw, processed, and smoothed data can be downloaded directly into Excel or as comma delimited ASCII file, as well as stored in default binary format.
- Algorithms for 2D and 3D data analysis are available for steady-state, thermal or chemical denaturation, and kinetic studies.

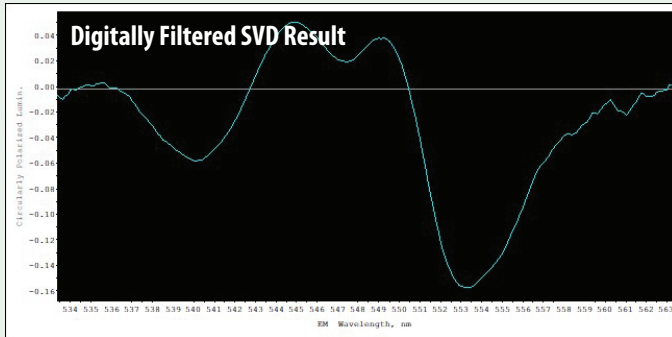
# Handling the data from the CPL Solo using OLIS GlobalWorks



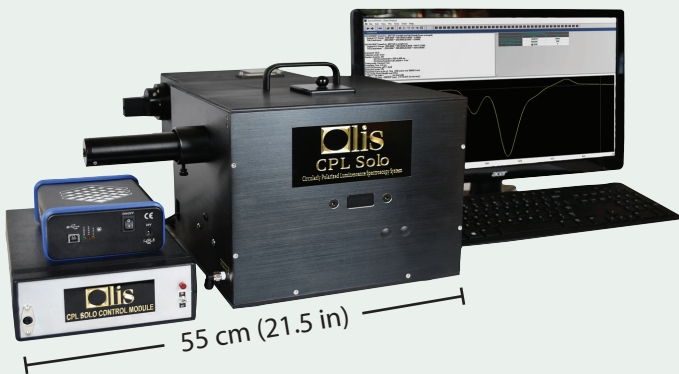
Start with raw data from 48 scans.  
Apply "Singular Value Decomposition" (SVD) digital filter.



Further reduce noise using 13 point "Digital filter."



Isolate a region of value using "Zoom."



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## SPECIFICATIONS

Wavelength Ranges:	
Excitation, single $\lambda$	LED specific, specify 240-1100 nm
Emission, Scanning	230-870 nm. 600-1600 nm with optional NIR enhancement
Spectral Resolution:	0.1 nm to 20 nm
Optics:	Single grating emission monochromator by OLIS
Detector:	UV/Vis photon counting detector. Optional NIR photon counting detector.
Scanning Speed:	up to 40 nm/sec
Wavelength Accuracy:	better than 0.1 nm
Linearity:	over at least seven orders of magnitude
Spectral Bandwidth:	down to 0.3 nm
Calibration:	Factory set and permanent
Lock-in amplifier:	None. No decoupling or amplification of polarization signal is required.

