

# **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
- ✓ **Scanning Emission**using a single grating monochromator
- ✓ Highest Sensitivity Detection with photon counting
- ✓ **Digital Acquisition of True IL and IR** correct calculation and presentation of GLUM

- ✓ Collects Polarization of Fluorescence and optionally phosphorescence lifetime
- ✓ Costs 50% Less than Models with CD Specific Hardware

  No xenon arc lamp, power supply, large monochromators, or lock-in amplifier
- √ 50-80% Smaller than the Size of Alternative Commercial Models

  Before computer, measures only 55 cm x 55cm



# **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 to within  $\pm$  0.001 volt/24 hour cycle.



#### LED as excitation source

- Wavelength specific LED with exceedingly high intensity and stability, 400-1100 nm standard.
  - > Ultraviolet wavelengths (240-390 nm) slightly higher price.
- Most are filtered to reduce the bandwidth of the produced color to + 5 nm.
- The filter and LED are housed in a metal tube casing, which is designed for easy interchange. Changing from one tube (wavelength A) to another (wavelength B) requires no tools, no alignment, and takes a few 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 "F-signal" from the PEM, so that every datum's exact state of polarization is known, eliminating the need for analog lock-in amplifier and pre-measurement settings.



### Polarizer within 2" Holder

- Mounting ledges before the sample to polarize the measurement light and after the sample to polarize the emitted light.
- · Lift and move without tools.
- Aligns with 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 grating with 1200 lines blazed at 450 nm for 240-870 nm.
- 40 x 45 mm grating with 1200 lines blazed at 750 nm for NIR studies.
- Motorized scanning with < 0.1 nm accuracy and scan rate > 40 nm/sec.



#### Detector

- Exquisitely sensitive photon counting detector, 230-870 nm
- xxxxxx for 700-1650 nm\*
- xxxxxxx for XXXX XXXX nm\*

# Digital Acquisition of True IL & IR

Employing an entirely digital scheme which dates to 1974 – a version of which was patented in 2005 – data acquisition from the CPL Solo is direct, absolute, and without any user settings necessary.

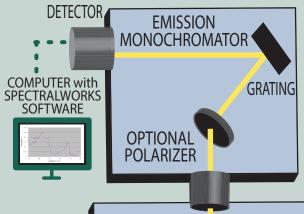


## **OLIS SpectralWorks software**

- All instrument settings for the CPL Solo hardware and accessories are supported.
- Intensity information (raw data) are read from the photon counter to an FPGA chip, where data are sorted by wavelength and polarization state L or IR.
- Full digital data handling results in linearity over at least seven orders of magnitude, zero drift, and flat baseline
- 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. These 60+ algorithms cover the gamut from single species to six species models.
  - > 3D fitting uses Singular Value Decomposition (SVD) which determines the number of species in any multi-wavelength case of 10 or more scans
  - > SVD is followed by Downhill Simplex and Matrix Exponentiation, which are methods for reconstructing the spectra and calculating the kinetics; see Methods in Enzymology, Volume 384, chapters 1, 2 & 3.

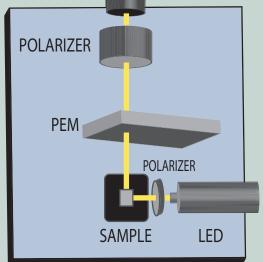


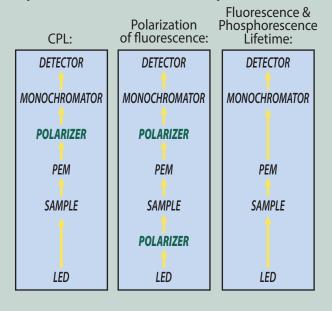
# CPL, Polarization of Fluorescence, and Phosphorescence Lifetime Fluorimeter



"CPL, Polarization of Fluorescence, and Phosphorescence Lifetime Fluorimeter" was a bit long of a name! But, the CPL Solo offers polarization of fluorescence (and thus anisotropy), as well as un-polarized fluorescence, with only fast and fail-safe positioning of polarizers. With a modest enhancement, the CPL Solo becomes a Phosphorescence Lifetime spectrometer, too.

#### Options for the location of the polarizer:





#### **SPECIFICATIONS**



Call us in Athens, Georgia, USA

(706) 353-6547 sales@olisweb.com

| Wavelength Ranges                 |  |
|-----------------------------------|--|
| Excitation                        | LED specific                             |
| Fluorescence emission             | 230-870 nm. 700-1700 nm with             |
| optional NIR enhancement          |  |
| Polarization of fluorescence      | 230-870 nm. 700-1700 nm with             |
| optional NIR enhancement          |  |
| Circularly Polarized Luminescence | 230-870 nm. 700-1700 nm with             |
| optional NIR enhancement          |  |
| Spectral Resolution               | 0.1 nm to 20 nm                          |
| Optics                            | Single grating emission                  |
| monochromator by OLIS             |  |
| Detector                          | Photon counting detector for             |
|                                   | UV/Vis emission by Hamamatsu.            |
|                                   | Optional InGaAs(s) for NIR               |
| Scanning Speed                    | up to 40 nm/sec                          |
| Wavelength Accuracy               | better than 0.1 nm                       |
| Dynamic Range                     | 0.001 to 3 AU/cm                         |
| Linearity                         | over at least six 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. No user settings for        |
|                                   | sensitvity, time constant, or amplitude. |
|                                   |  |

