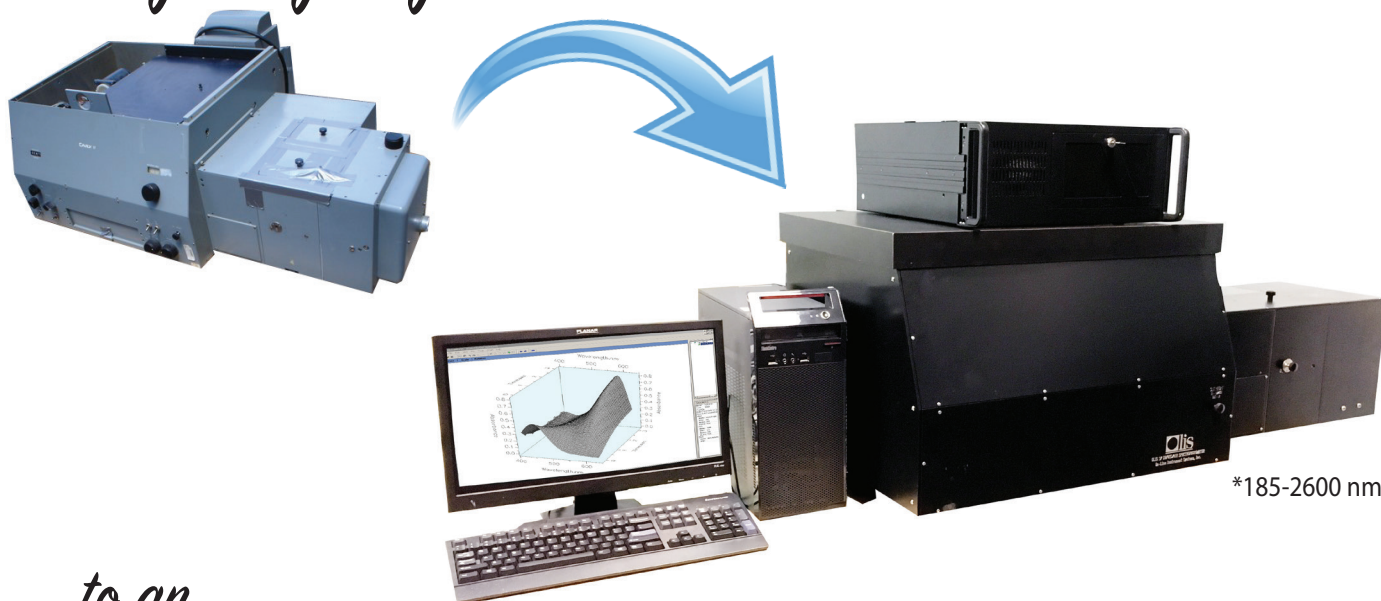




Upcycling a great Cary 14/17 UV/Vis/NIR*



to an **OLIS 14/17 Spectrophotometer!**

The 1950s through the 1970s was a lush era for scientists, when man achieved the audacious goal of walking on the moon and the Cary 14 and Cary 17 UV/Vis/NIR spectrophotometers were developed.

In their day, these instruments sold for \$18,000 to \$20,000, equivalent to over US\$100,000 in today's currency.

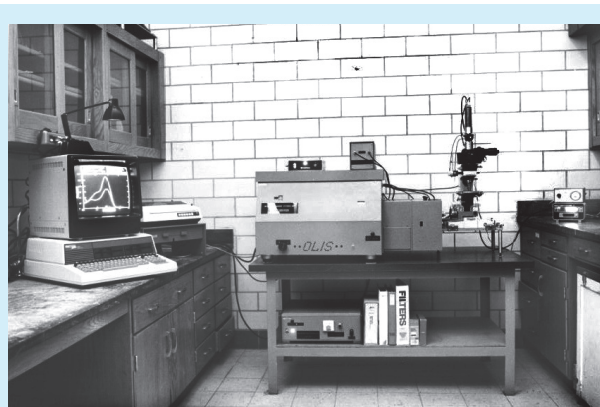
"They don't make them like they used to" could have been coined for these spectrophotometers. Absolutely every inch of these instruments has withstood the test of time.

Time wasn't kind to the electronics and strip chart recorder, though. As early as the late 1970s, our company founder was liberating the optical system of this hardware, replacing it instead with smaller, faster, better electronics and – of course – the computer.

There is no downside to upcycling; OLIS modernized Cary 14s & 17s are used in top research laboratories throughout the world as absorbance, fluorescence, circular dichroism, circularly polarized luminescence, and CLARiTY spectrophotometers.

Whether you are fortunate enough to own a Cary 14 or Cary 17 or need to purchase one from us, the result will be a "brand-new" UV/Vis/NIR spectrometer.

The OLIS modernization will give 100% of the best of today's computerization, reliability, and longevity, while the Cary optics ensure you the equal or better of today's sensitivity, spectral range, accuracy, reproducibility, stray light, and more.



Shown is an early OLIS 14 which was customized to include a high performance microscope as the sample compartment. The host computer pre-dates the IBM PC by several years.

We remove and upgrade *ALL* of the aging circuitry

- ✓ All electronic circuit boards within the card cage, and the card cage, are removed and discarded, removing hundreds of pounds of obsolete circuitry.
- ✓ The chopping motors are replaced with high precision stepping motors.
- ✓ The slit drive motor and cam are removed and discarded; a precision linear stepping motor is fitted to the monochromator, so that a total of 7,200 steps are now used to drive the slits from 0.0 to 4.0 mm.
- ✓ The grating table and the filter wheel stepping motors are retained, but they are now powered by all new OLIS electronics.
- ✓ The source's AC transformer is removed and a new DC power supply is added.

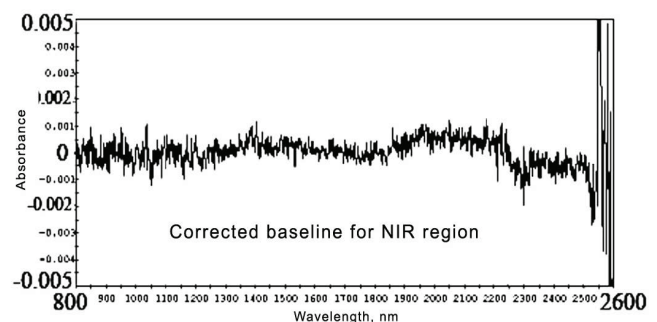
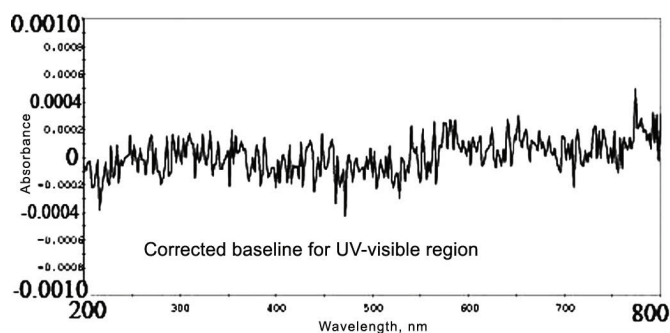


OLIS software, Win 10 compatibility and a valued, trusted UV/Vis spectrophotometer

The operator is now working with a very good, easy to use, and attractive software package on a modern PC.

One of the more appreciated changes to the original spectrophotometer is the new mode of producing a flat baseline. (Many tedious hours have been spent adjusting the

MULTIPOT system in the Cary 14!) With the Olis system, one scans a spectrum without sample present, stores this value, then the computer subtracts the 'baseline' (background) record from all incoming raw data. Baseline flatness of better than ± 0.001 absorbance units is achieved from modernized Cary units.





Upcycling gives you *decades* more use and the option of alternative configurations

Fluorescence: This "14F" supports scanning excitation & scanning emission, along with scanning absorbance. Excitation & absorbance by the Cary monochromator (185-2600 nm). Emission by the added monochromator and detector (230-870 nm or 600-1700 nm).



This OLIS 17 has a sample chamber specific to use of a variable angle thin film holder and right angle emission detection through a CMOS.

This sample compartment accommodates an integrating sphere for Diffuse Reflectance measurements. Detector ports are provided at top and at the front panel.



The OLIS DSM 172 supports circular dichroism & absorbance, fluorescence, polarization of fluorescence & circularly polarized luminescence!

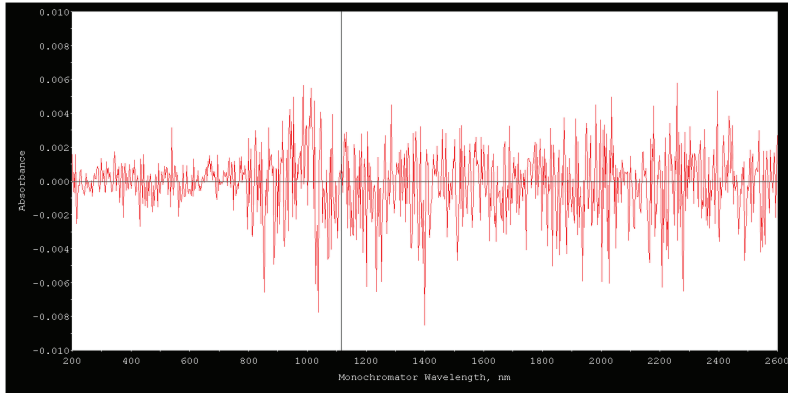


Technical Specifications of the original

Wavelength Range	
• Cary Models 14 & 17	185-2600 nm (with a select few reaching up to 3000)
Optical System	
• Cary Models 14 & 17	prism & grating
Photometric Noise	< ± 0.0001 ABS units throughout UV/Vis
Drift	± 0.005 ABS units/hour
Lifetime	Minimum of 10 years, with potential for many decades of uninterrupted utility
Wavelength Drive Speed	Arbitrary; from 40 nm/sec to very slow
Data Sampling Interval	Arbitrary; from 50 nsec to arbitrarily long
Light Source Changeover	Computer controlled and user selectable
Stray Light	< 0.0001%
Photometric System	Side-on photomultiplier tubes for the UV/Vis and PbS for NIR; for absorbance, photon counter for emission
Photometric Accuracy	± 0.001 ABS units to 2.0 ABS and ± 0.003 from 2.0 to 3.0 ABS
Photometric Repeatability	Better than < + 0.001 ABS units
Auto-Zero Adjustment	Fully under computer control
Baseline Stability	< 0.001 ABS units/hour after initial warm-up
Baseline Correction	Automatic with all incoming records once baseline is collected
Baseline Flatness	± 0.001 ABS units/hour after initial warm-up
Data Storage Mode	3D scans stored as single file in default Olis binary (.ols); right click Excel® (.xls) or ASCII (2D)
Repetitive Scanning	As a function of time, temperature, pressure or other process
Monochromator	Premium quality dual beam, prism + grating F/8 monochromator
Light Source	Air cooled 50 or 100 watt tungsten for Vis/NIR and air cooled 30 watt deuterium for UV. A high intensity lamp (650 watt) for use on the NIR is available as an option. A 150 watt xenon arc lamp for fast kinetics & CD.
Detector	R955 PMT for UV/Vis and PbS for NIR; InGasAs for NIR CD, fluorescence
Sample Compartment	Large (10 x 10 x 10 cm) which houses standard 1cm ² cuvette holders (two) for true sample and reference acquisition. Large chamber can be customized by Olis or client to use our high precision linear 6 or 10 multiposition cell holders, Peltier cell holder(s), stopped-flow, variable angle thin film holder, long pathlength cuvette holder, and others.
Power Requirements	110 and 220 v models are available
Dimensions	4' x 2' x 3'
Weight	Approx 150 kg
Ambient Requirements	Normal laboratory conditions. N ₂ is useful for flushing chamber during UV scanning

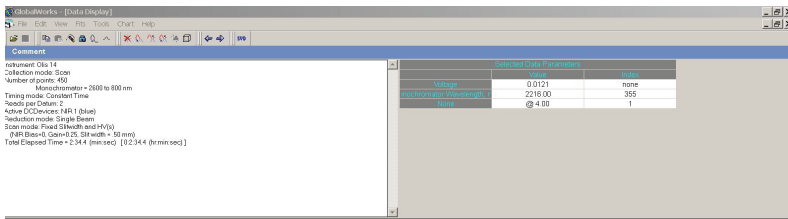


Only the most expensive dual beam spectrophotometers can duplicate data of this quality

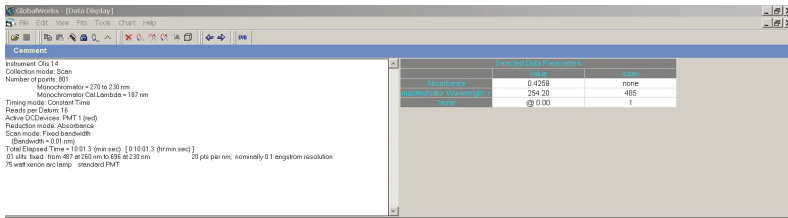
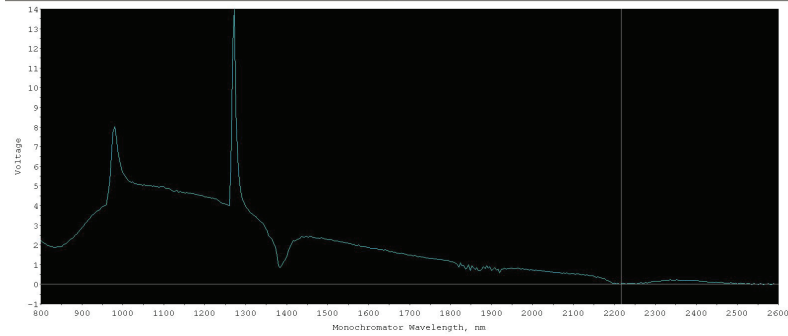


Look at the Y-axis on these noise data! (-0.010 to 0.010)

Number of points: 800 from 2600 to 200 nm
Absorbance Range: -0.010 to 0.010
Timing mode: Constant Time
Scan mode: Fixed HV
Reads per Datum: 5
Total Elapsed Time = 10:15.2 (min:sec)

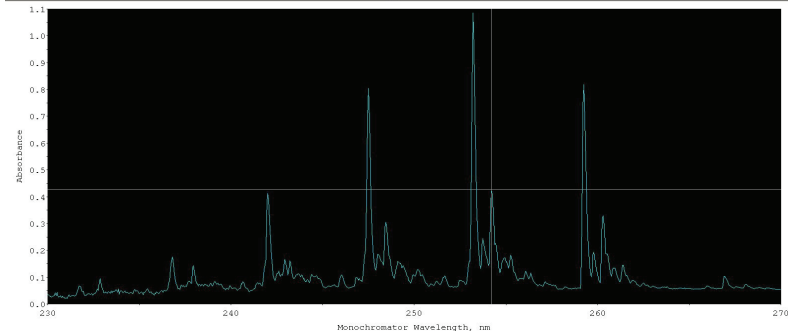


Useful light to 2600 nm using the standard PbS detector; in this example, 450 points were acquired in the 2600-800 nm span in 2 min 34 seconds.



Look at the X-axis on these data! (230 nm to 270 nm)

Highest resolution for sharpest peak definition. Instruments with lesser resolution than this will smear these sharp peaks (benzene). In this example, the OLIS upcycled Cary collected 801 points across this 40 nm span (from 230 nm to 270 nm), collecting and signal averaging 16 readings per retained point. Acquisition time was 10 minutes.



Contact OLIS to upcycle your Cary, or to purchase a complete system from us! Send us an email at sales@olisweb.com or call us today (706) 353-6547.