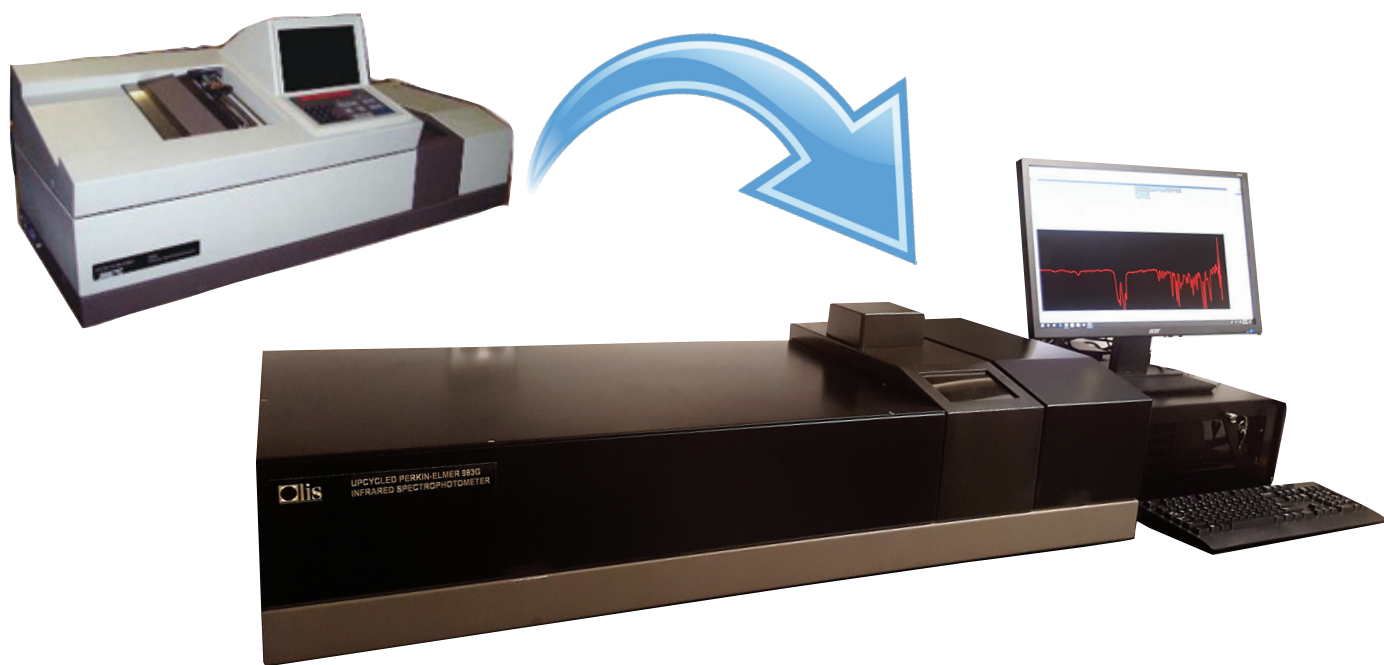




# Upcycling your PerkinElmer 983IR



## to an **OLIS 983 IR Spectrometer!**

### **The PerkinElmer 983 IR is one of the greats.**

Optical coating companies worldwide value this industry gold-standard dual beam grating spectrophotometer for measuring optical coatings in the IR region. The wavelength range is 2 to 56 microns (5000cm<sup>-1</sup> to 180cm<sup>-1</sup>) and the ordinate accuracy is +/-0.1% for highly accurate and reliable results across a diverse and expansive range of applications.

However, the PE 983 IR will fail one day. And when it fails, it will be worthless unless (a)

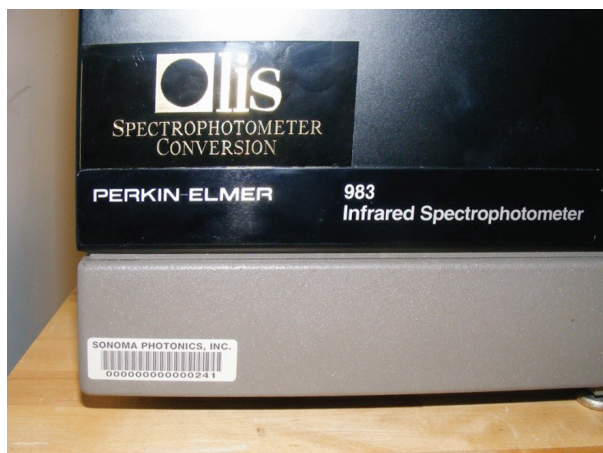
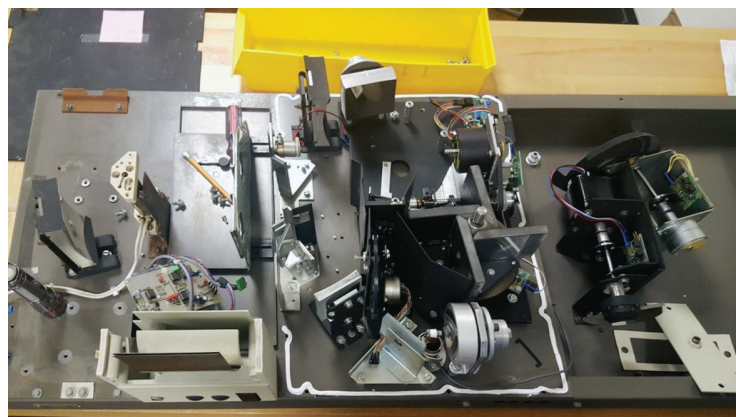
repair parts are available and there's a technician who knows how to work on the instrument or (b) you come to OLIS and replace 100% of the PE electromechanical parts with new OLIS parts. Option (a) lasts until the next part fails. Option (b) lasts decades and is supported by OLIS, Inc.

The OLIS 983 IR is "like new" and entirely warranted and supported, inclusive of the great dispersive optics of the original PE and all new OLIS Win 10 electronics and computerization. We usually powder-coat the chassis a beautiful high gloss black.



## 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 many 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.
- ✓ The data collection scheme is handled using elegant FPGA code developed in 2018. This code replaced software used on OLIS 983 IR spectrometers throughout the 1990s to 2018 and results in far faster movement of the choppers and gratings.



The OLIS 983 IR includes the PE chassis, optical train, and original sample compartment with original or new sample holders.

The OLIS software collects the correct value for %T without any adjustment or calibration.



All accessories used on the original PE 983 can be retained.

And, any sample handling accessory by Harrick, Pike, InfraSpec, OLIS & elsewhere can be added.

OLIS computerized variable angle thin film holder, accommodating round or rectangular film and filters from thinnest to multiple centimeters, shown with a 25 mm round filter in place.



Corning, Raytheon, OCLI, and others have put their beloved PE 983 on a truck, only to have it return weeks later look like it is fresh off the factory floor. From the fresh powder coating of the exterior to the new mirrors and/or recoated gratings, the instrument matches all new specifications. And, it does so with a marvelous user interface.

If you need a complete system from us, light a candle that we have one in stock. Since they are so highly valued, finding folk willing to part with theirs is tough. Sometimes we have one in stock. And sometimes we don't.

If you have a spare to use as trade-in or for us to purchase, call.

Fred Goldstein's Filmstar Measure software is retired along with the original electronics. FilmStar Design can be used with OLIS SpectralWorks data files.

Two short videos show the OLIS software and Variable Angle Thin Film holders on YouTube:

<https://youtu.be/CJhalaO0vFA>

[https://youtu.be/L0vPg\\_0m\\_mY](https://youtu.be/L0vPg_0m_mY)





## Technical Specifications for the Olis 983 IR

*All **optical** values remain those quoted by the manufacturer at time of manufacture. Original data collection options remain intact, but with much greater flexibility due to **entirely digital mode** of operation and data acquisition/handling.*

<b>Principle</b>	Real-time double beam ratio recording spectrophotometer with pre-sample chopping.
<b>Optics</b>	F/4.2 monochromator with four gratings and nine filters; purgeable.
<b>Screen Readouts</b>	Win 10 computer with 17" LCD. Files saved as default binary with Excel and ASCII export options, in addition to JPG image creation of 3D data files.
<b>Readout</b>	Quantitative results Wavenumber annotation Ordinate scale annotation Scan conditions and peak printout Arbitrary user comment string of any length
<b>Data Handling</b>	Corrected spectrum routine, wherein a spectrum is collected in open chamber run and corrected with blocked beam scan. Screen cursor with dynamically presented values on its location Spectral accumulation Fast screen graphics with reformatting in up to three dimensions Quantitative analysis for 2D and 3D data using most modern, powerful, fast, and useful algorithms existing. Processing by FilmStar Design, if used.
<b>Source</b>	Opperman source, self-igniting and self regulating
<b>Detector</b>	A new TGS detector, preamp PCB and the bracket to install it into the same place as the original thermocouple. Among the advantages of the newer detector is its production of a near square wave rather than the exponential rise and fall of the original thermocouple.
<b>Abscissa Range</b>	5000 $\text{cm}^{-1}$ to 180 $\text{cm}^{-1}$ (2,000 to 55,555 nm)
<b>Abscissa Accuracy</b>	$\pm 3 \text{ cm}^{-1}$ from 5000 to 4000 $\text{cm}^{-1}$ $\pm 2 \text{ cm}^{-1}$ from 4000 to 2000 $\text{cm}^{-1}$ $\pm 1 \text{ cm}^{-1}$ from 2000 to 180 $\text{cm}^{-1}$ <i>Accuracy is independent of scan conditions</i>
<b>Abscissa Repeatability</b>	Run to run repeatability after warm up of 0.005 $\text{cm}^{-1}$
<b>Abscissa Expansion</b>	User selectable through Olis Windows 10 Professional software



<b>Scan Time</b>	Highly variable, based on scanned range, how many data points per scan, amount of signal averaging per retained datum, etc.																							
<b>Time Drive</b>	Arbitrary data collection rates up to two data points per second.																							
<b>Ordinate Scales</b>	Double Beam, transmission (T) Double Beam, percent transmission (% T) Double Beam, absorbance (AU) Single Beam, transmission Single Beam, absorbance																							
<b>Ordinate Accuracy and Repeatability</b>	Better than 0.1%T , typically limited by noise level, which is a function of scan speed and signal averaging during scan																							
<b>Ordinate Scale Expansion</b>	User selectable through Olis software																							
<b>Baseline Flatness</b>	Better than $\pm 0.5\%T$																							
<b>Resolution</b>	Best resolution for each slit mode. Olis software implements the automatic slit mode of the original 983. The slits are programmed to adjust during a scan to maintain constant intensity at the detector. <table border="1"><tr><td><b>Mode</b></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td><b>Resolution</b></td><td>10</td><td>7</td><td>5</td><td>3</td><td>2</td><td>1</td><td>0.5 cm<sup>-1</sup></td></tr></table>								<b>Mode</b>	1	2	3	4	5	6	7	<b>Resolution</b>	10	7	5	3	2	1	0.5 cm <sup>-1</sup>
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<b>Stray light</b>	<table><tr><td>&lt; 0.1%</td><td>5000 to 2000 cm<sup>-1</sup></td></tr><tr><td>&lt; 0.2%</td><td>2000 to 1000 cm<sup>-1</sup></td></tr><tr><td>&lt; 0.3%</td><td>1000 to 750 cm<sup>-1</sup></td></tr><tr><td>&lt; 0.4%</td><td>750 to 400 cm<sup>-1</sup></td></tr><tr><td>&lt; 1.0%</td><td>400 to 180 cm<sup>-1</sup></td></tr></table>								< 0.1%	5000 to 2000 cm <sup>-1</sup>	< 0.2%	2000 to 1000 cm <sup>-1</sup>	< 0.3%	1000 to 750 cm <sup>-1</sup>	< 0.4%	750 to 400 cm <sup>-1</sup>	< 1.0%	400 to 180 cm <sup>-1</sup>						
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<b>Ambient Temperature range</b>	15 to 35°C																							
<b>Relative Humidity</b>	45 to 75%																							
<b>External Requirements</b>	117 volt, 60 Hz																							
<b>Power requirement</b>	250 VA																							
<b>Acceptable variations in power supply</b>	Voltage: $\pm 10\%$ ; Frequency: $\pm 4\%$ ;																							
<b>Size</b>	1200 mm long x 500 mm deep x 250 mm high																							
<b>Weight</b>	< 50 kg																							



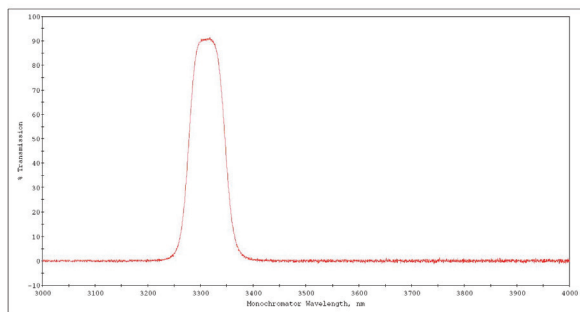
The operator is now working with a very good, easy to use, and attractive software package on a modern PC.

These print-outs (white background) and actual screen image (black background) show spectra collected by an OLIS 983 IR using OLIS SpectralWorks software. Processing can be done within SpectralWorks (i.e., GlobalWorks)

or using FilmStar Design or other third party program.

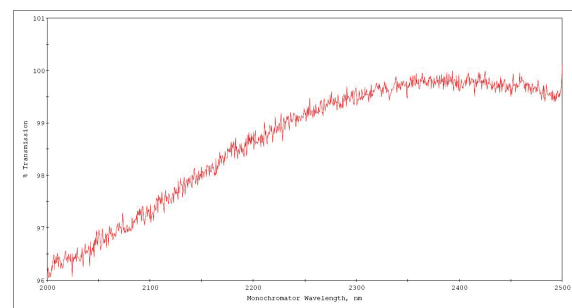
The "Print Preview" page shows you exactly the report that will be printed. The text below the graph is auto-generated but can be edited to include any information you want permanently recorded with the data and thus included in a printable report.

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Created: 7/1/2016 11:25:59 AM



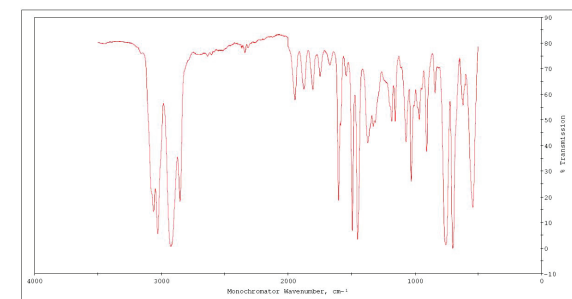
Instrument: PE 983  
Collection mode: Scan  
Number of points: 3794

Data name: 133537  
File name: C:\Documents and Settings\OLIS\My Documents\Spectral Data\Materion 983 filter data\Materion\Materion\133537  
Created: 7/1/2016 9:39:13 AM



Instrument: PE 983  
Collection mode: Scan  
Number of points: 1001  
Monochromator = 2500 to 2000 nm

Data name: PE 983 Polystyrene  
File name: C:\DOCUMENT-1\OLIS\MYDOCU-1\SPECTR-1\OLISPE-1.OLS  
Created: 1/16/2008 2:44:42 PM



Instrument: PE 983  
Collection mode: Scan  
Number of points: 3000  
Monochromator = 3500 to 500cm<sup>-1</sup>

