

# The LP980 Series

## Transient Absorption Spectrometer



A first of its kind on the market, the LP980 allows for the measurement of transient absorption, laser-induced fluorescence and phosphorescence, Raman spectroscopy and laser-induced breakdown spectroscopy (LIBS) all in one instrument.

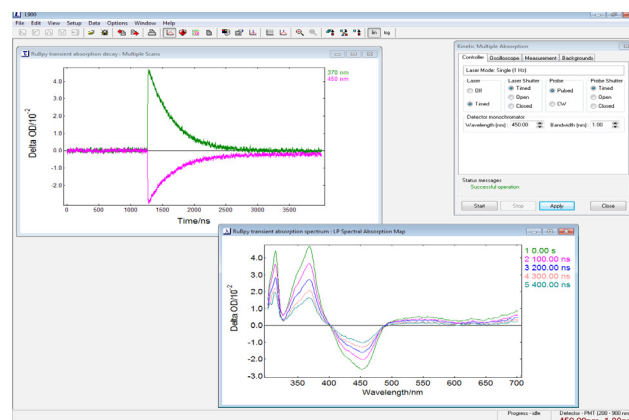
The LP980 sets the standard for technical performance required in a premier research instrument, offering unsurpassed measurement capabilities across a broad range of chemical, physical and biological applications.

### Measurements

- Transient Absorption
- Laser-Induced Breakdown Spectroscopy (LIBS)
- Laser-Induced Fluorescence (LIF) and Phosphorescence
- Time-Gated Spectra (ns,  $\mu$ s, ms time ranges)
- Time-Resolved Raman Spectroscopy
- Triplet-Triplet Annihilation
- Reaction Rate Studies

### Features:

- Dual sample chamber - measure transient chemical and biological species up to 2.55  $\mu$ m using the pump-probe technique AND fluorescence and phosphorescence lifetimes down to nanosecond time ranges
- Detection limit in flash photolysis single shot sensitivity of  $\Delta$ OD 0.002 (kinetic; PMT) and  $\Delta$ OD 0.0005 (spectral; ICCD)
- 300 mm monochromators - integrated 2nd order removal filters on automated filter wheel
- 150 W Xenon lamp, 100 A pulsing - high intensity, high SNR, providing better stability for longer transients
- Internal laser beam adjustment - preventing external beam steering
- One comprehensive software package for complete computer control of all components and measurements



*RuBpy Kinetic Scans and Spectral Time Absorption Maps*

## Technical Specifications

### LP980 - Base Configuration

The LP980 is a transient absorption spectrometer using the pump-probe technique for measuring transient kinetics (Kinetic Mode) and/or time-gated transient spectra (Spectral Mode), generated by laser excitation.

Transverse sample excitation geometry comes as standard. Thin-film, diffuse reflection, Raman, fluorescence and phosphorescence lifetime measurement, and LIBS accessories are available as options.

#### Monochromator / Spectrograph

Type	Czerny-Turner with triple grating turret
Focal length	300 mm
Mirror	Automatic, computer-controlled for detector selection
Slits	5.0 $\mu\text{m}$ to 10 mm (continuously adjustable), motorised

#### Laser Excitation Source\*

Single wavelength	Flashlamp pumped Q-switched Nd:Yag laser operating at 1064 nm, 532 nm, 355 nm, or 266 nm
Tuneable	OPO, tuneable in range 410 nm – 710 nm (signal). Idler and UV doubler options possible

\* We can supply a fully integrated laser, please contact us for more information

### LP980-K (Kinetic Mode)

For lifetime transient decay measurements at a single wavelength

Grating	Plane ruled grating 1800 grooves/mm, 500 nm blaze as standard
Dispersion	1.8 nm/mm
Spectral Range	200 nm – 870 nm
Spectral Resolution	0.1 nm
Sensitivity	$\Delta\text{OD}$ 0.002 (single shot - fast detector option, PMT), $\Delta\text{OD}$ 0.0005 (single shot - slow detector option, ICCD)
Detector Type	Photomultiplier with 5 stage dynode chain for high current linearity
Detector Impedance	50 $\Omega$ (amplified – fast detector, <3 ns rise time), 1 k $\Omega$ (slow detector, <100 $\mu\text{s}$ rise time)

### LP980-KS (Kinetic & Spectral Mode)

For lifetime transient decay measurements AND spectral measurements of the decay process

Gratings	Kinetic Mode grating plus an additional plane ruled grating: 150 grooves/mm, 500 nm blaze supplied
Dispersion	21.6 nm/mm
Spectral Coverage	540 nm (active horizontal ICCD dimension: 25 mm)
Spectral Resolution	0.56 nm (spectral coverage / 960 pixels)
Sensitivity	$\Delta\text{OD}$ 0.0005 (single shot)
Detectors	Kinetic Mode PMT plus an additional image intensified CCD camera (ICCD) supplied
Min. Optical Gate width	7 ns (FWHM)
Active Pixels	960 x 256
Active Area	25 mm x 6.7 mm
Cooling	-20°C as standard (-35°C with additional water circulation)

### LP980 Upgrade Options

Grating Options	A variety of gratings are available with 150-2400 grooves/mm, optimised from UV through to NIR
Sample Holder Options	Cross-beam geometry, diffuse reflectance, LIBS, Raman (excited-state and ground-state) accessory
Detector Options	InGaAs Detectors (900 nm – 2550 nm) for NIR range are available

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