

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.

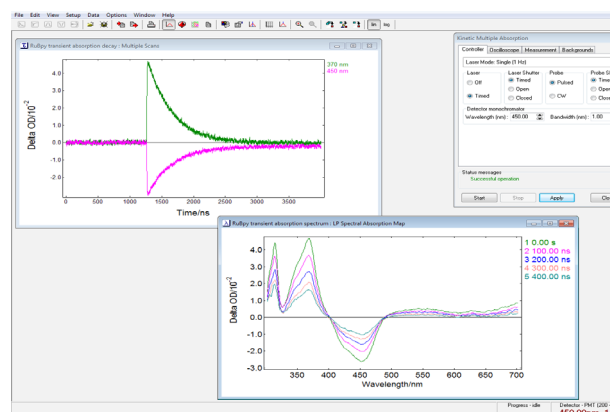
The LP980 sets the standard for technical performance required in a premier research instrument, offering unsurpassed measurement capabilities across a broad range of chemical, physical and biological applications.

Measurements

- Transient Absorption
- Laser-Induced Breakdown Spectroscopy (LIBS)
- Laser-Induced Fluorescence (LIF) and Phosphorescence
- Time-Gated Spectra (ns, μ 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 μ 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 ΔOD 0.002 (kinetic; PMT) and ΔOD 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



RuBy 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 μm 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 | ΔOD 0.002 (single shot - fast detector option, PMT), ΔOD 0.0005 (single shot - slow detector option, ICCD) |
| Detector Type | Photomultiplier with 5 stage dynode chain for high current linearity |
| Detector Impedance | 50 Ω (amplified – fast detector, <3 ns rise time), 1 k Ω (slow detector, <100 μs rise time) |

LP980-KS (Kinetic & Spectral Mode)

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

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|-------------------------|--|
| 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 | ΔOD 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

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|-----------------------|--|
| 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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