OmniFluo900 Series Fluorescence Spectrometers, Steady-State and Lifetime

Model OmniFluo900 Series · waveqvanta.com/products/omnifluo900-series-fluorescence-spectrometers

Modular research fluorescence spectrometer for steady-state spectra and lifetimes from picoseconds to seconds.



The OmniFluo900 series is a modular fluorescence spectrometer for research in materials science, physics, chemistry, life sciences and agricultural science. It measures both steady-state spectra and fluorescence lifetimes, and can be configured for spectral coverage from the ultraviolet to the mid-infrared and for lifetimes from hundreds of picoseconds to seconds. Microscope and cryostat options add spatially resolved and temperature-dependent measurements.

Key features

- Modular platform combining steady-state spectra and lifetime measurement from hundreds of picoseconds to seconds
- Water Raman SNR above 10,000:1 with single-photon counting detection
- Spectral coverage from UV to mid-IR (200–5500 nm) with optional PMT, InGaAs and InSb detectors
- 320 mm image-corrected monochromators with triple grating turrets; optional double monochromators for 1×10^{-9} stray light
- Spectral correction with factory-measured correction files as a standard procedure
- Large sample chamber with side laser port and options for polarizers, cryostats, integrating sphere and microscope
- Software for excitation, emission, synchronous and 3D scans plus kinetic, lifetime and TRES measurements with lifetime fitting

Specifications

Measurement Modes	Steady-state and time-resolved (lifetime) fluorescence
Spectral Range (Standard)	Emission 200–870 nm; excitation 200–800 nm
Extended Spectral Coverage	Up to 200–5500 nm with optional detectors
Spectral Resolution	0.1 nm (system); 0.08 nm @ 435.84 nm with 1200 g/mm grating
Water Raman SNR	>10,000:1 (SQRT method)
Lifetime Range	500 ps–10 s (TCSPC 500 ps–2.2 s; MCS 10 µs–10 s)
Monochromators	Czerny-Turner, 320 mm, image-corrected; optional 2 × 180 mm double monochromator
Stray Light	1×10^{-5} (single); 1×10^{-9} (double monochromator)
Wavelength Accuracy / Repeatability	±0.2 nm / ±0.1 nm
Minimum Wavelength Step	0.005 nm
Grating Turret	Triple grating turret in each monochromator
Excitation Gratings	1200 g/mm (300 nm blaze); 600 g/mm (500 nm blaze)
Emission Gratings	1200 g/mm (500 nm blaze); 600 g/mm (750 nm blaze); 300 g/mm (1250 nm blaze)
Slits	Motorized, 0.01–3 mm continuously adjustable
Filter Wheels	6-position at excitation and emission exits; automatic order-sorting filters

Steady-State Source	75 W xenon arc lamp, 200–1800 nm, lamp-cup design, coupling efficiency over 90%
Pulsed Sources (Optional)	µs pulsed xenon flashlamp, ps pulsed laser or LED, supercontinuum, OPO tunable ns laser
Other Optional Sources	CW lasers (e.g. 808 nm, 980 nm), X-ray tube, lamp-pumped ns DPSS laser
Standard Detector	TE-cooled photon-counting PMT (−10 °C), 185–900 nm
Optional PMTs (UV–NIR)	TE-PMT-R13456: 185–980 nm; TE-PMT-R2658: 185–1010 nm
Optional PMTs (NIR)	TE-PMT-H10330C-75: 950–1700 nm; LN-PMT-R5509-73: 300–1700 nm
Optional Analog Detectors	TE-InGaAs 800–1700 nm or 800–2600 nm; LN-InSb 1000–5500 nm
Photon Counter	100 Mcps, 1 MB/s sampling, 4 analog inputs (1–10 V), 16-bit A/D
TCSPC Module	100 Mcps; 16–1024 ps resolution; 65,535 channels
Lock-in Amplifier	50 mHz–120 kHz, dynamic reserve over 100 dB
Sample Chamber	Fused silica lenses; 50 × 50 or 25 × 25 mm filter holder; side laser port with variable ND
Sample Holders	Standard: cuvette, powder, film; optional rotating, stirred, water-bath heated
Cryostat (Optional)	77–500 K or 3–300 K
Spectral Scan Modes	Excitation, emission, synchronous, 3D; optional anisotropy and temperature scans
Lifetime Modes and Analysis	Kinetic, lifetime and TRES scans; lifetime fitting; quantum yield; spectral correction

Typical applications

- Semiconductor photoluminescence (PL) and PLE measurements
- Phosphor reflectance, absorption and quantum yield
- Upconversion fluorescence
- OLED and display materials
- Carbon nanotubes
- Chlorophyll and carotenoid analysis, biomedical fluorescence diagnostics