

FluoTime 300

Fluorescence spectrometer for beginners and experts

- Fully automated system with modular and flexible design
- Time-resolved and steady-state operation
- Easy to use software with application wizards and scripting option
- Lifetimes from picoseconds to milliseconds
- Ultimate sensitivity with 29000:1 Water Raman SNR
- HPD-07 and -42 PMT's with spectral ranges between 220 and 870 nm, detection efficiency up to 25 %
- Single or double monochromator in excitation and emission

Applications

- Fluorescence Anisotropy (Polarization)
- Steady-State Fluorescence Spectroscopy
- Time-Resolved Photoluminescence (TRPL)
- Materials Science
- Photochemistry



The FluoTime 300 is a fully automated, high performance fluorescence spectrometer for steady-state, life time and phosphorescence measurements. The FluoTime 300 contains the complete optics and electronics for recording steady state spectra and fluorescence decays by means of Time-Correlated Single Photon Counting (TCSPC) or Multichannel Scaling (MCS) from few picoseconds to several seconds. The system is designed to be used with picosecond pulsed diode lasers, LEDs or Xenon lamps (CW and pulsed). Multiple detector options enable a large range of system configurations from the UV up to the IR range. The system features an ultimate sensitivity with 29000:1 Water Raman SNR. The FluoTime 300 can be used to study fluorescence and phosphorescence decays from few picoseconds to several seconds. With a large range of additional accessories the system is an excellent standard for research and analysis.

Specifications

| Monochromators | | |
|-------------------------------|---|---|
| Type | single, Czerny-Turner design | single, Czerny-Turner design |
| Focal length | 150 mm | 300 mm |
| Aperture | F/4.6 | F/4.1 |
| Stray light rejection | 10 ⁻⁵ | 10 ⁻⁵ |
| Grating* | 1200 g/mm blazed at 500 nm in emission | 1200 g/mm, blazed at 300 nm in excitation 1200 g/mm, blazed at 500 nm in emission 600 g/mm, blazed at 1250 nm in emission |
| Resolution | 0.3 nm | 0.3 nm |
| Step size (min) | 0.004 nm | 0.004 nm |
| Slit width adjustable between | 0 - 10 mm, (0-54 nm BP), (continuously adjustable, completely motorized) | 0-10 mm, (0-27 nm BP) (continuously adjustable, completely motorized) |
| Wavelength accuracy | 0.3 nm (1200 g/mm grating) | 0.2 nm (1200 g/mm grating) |
| Wavelength repeatability | ± 0.05 nm | ± 0.05 nm |
| Dispersion | 5.4 nm/mm | 2.7 nm/mm |
| Type | double, Czerny-Turner design additive in excitation, additive and subtractive in emission | |
| Focal length | 2 × 300 mm | |
| Aperture | F/4.1 | |
| Stray light rejection | 10 ⁻⁸ | |
| Grating* | 1200 g/mm, blazed at 300 nm in excitation 1200 g/mm, blazed at 500 nm in emission 600 g/mm, blazed at 1250 nm in emission | |
| Resolution | 0.3 nm (subtractive), 0.15 nm (additive) | |
| Step size (min) | 0.004 nm | |
| Slit width adjustable between | 0-10 mm (0-27 nm BP subtractive, 0-13.5 nm BP additive) (continuously adjustable, completely motorized) | |
| Wavelength accuracy | 0.2 nm (1200 g/mm grating) | |
| Wavelength repeatability | ± 0.05 nm | |
| Dispersion | 2.7 nm/mm (subtractive), 1.35 nm (additive) | |

| Excitation sources | | | |
|--------------------|----------------------------------|--|---------------|
| Light source | Laser Diode Heads (LDH Series) | Picosecond Laser Module (VisUV / VisIR) | |
| Wavelengths | 266-1990 nm (single wavelengths) | 266, 280, 290, 355, 532, 560, 590, 765, 1064 and 1531 nm | |
| Pulse width | 40-200 ps | ca. 70 ps | |
| Repetition rate | up to 80 MHz | up to 80 MHz | |
| Light source | pulsed LEDs (PLS Series) | pulsed Xenon lamp | CW Xenon lamp |
| Wavelengths | 245-600 nm | 200-900 nm | 200-900 nm |
| Pulse width | 400 ps - 1 ns | < 1 µs | – |
| Repetition rate | up to 40 MHz | 0.1 to 300 Hz | – |



| Detectors | | | | | | | |
|---|--------------------------|-------------|------------------------------------|---------|---------|-------------------------------------|-------------|
| Type* | PMT (PMA-C Series) | | | MCP-PMT | | | VIS/NIR-PMT |
| Spectral range (nm) | 185-700 | 300-820 | 300-900 | 160-650 | 160-850 | 160-910 | 220-1010 |
| Dark counts (cps, at 20 °C, typ. value) | – | < 200 | < 3000 | < 50 | < 500 | < 2000 | < 200 |
| Transit time spread (ps) | < 180 | < 180 | < 180 | < 25** | < 25** | < 25** | < 450 *** |
| Type* | NIR-PMT | | PMA Hybrid | | | | |
| Spectral range (nm) | 950-1400 | 950-1700 | 220-650 | 220-850 | 300-720 | 300-870 | 380-890 |
| Dark counts (cps, at 20 °C, typ. value) | < 10.000 | < 200.000** | < 100 | < 200 | < 700 | < 500 | < 1000 |
| Transit time spread (ps) | < 300 | < 300 ** | < 50 | < 50 | < 120 | < 130 | < 160 |
| Data acquisition | | | | | | | |
| Type | PicoHarp 300 | | TimeHarp 260 PICO | | | TimeHarp 260 NANO | |
| Number of time channels/ curve | up to 65536 | | up to 32768 | | | up to 32768 | |
| Count depth | 16 bit | | 25 ps, 2.5 ns (long range mode) | | | 32 bit | |
| Time resolution (bin width) | 4 ps | | < 25 ns, 2.5 ns (long range mode) | | | 250 ps | |
| Dead time | < 95 ns | | 819 ns - 1.71 s | | | < 1 ns | |
| Full scale time range | 260 ns - 33 µs | | 81.92 µs - 171 s (long range mode) | | | 260 ns - 33 µs 32.8 µs - 68.48 s | |
| Operating environment | | | | | | | |
| Computer system | Windows 10 | | | | | | |
| Power requirements | 110 V to 230 V, 50/60 Hz | | | | | | |
| Dimensions (base unit) | | | | | | | |
| Without steady-state option | 900×550×400 mm (w×d×h) | | | | | | |
| With steady-state option | 900×1100×400 mm (w×d×h) | | | | | | |

* Other types are available upon request.

** Values provided by Hamamatsu.

*** IRF, measured at FT300 with LDH 405 laser diode



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