Fluorescent spectrometer with life-time measurement

Manufacturer: Horiba Scientific
Model: Fluorolog-3 with FluorEssence

Description

The FluoroLog®-3 is a unique, modular system which allows the researcher to interchange a versatile range of accessories to correspond perfectly with the characteristics of a given sample. From analysis of steady-state or molecular dynamics to IR probes, the FluoroLog®-3 comes equipped with a wide range and limitless configuration of accessories to enhance the accuracy and speed of your application.

Specification

The Fluorolog®-3 spectrofluorometer consists of modules and components controlled by the specialized software. Although the system can be configured in various ways for a variety of applications, the basic (standard) Fluorolog®-3 spectrofluorometer system consists of the following components:

Excitation Source: 450-W xenon short arc, mounted vertically in an air-cooled housing. Light collection and focusing by an off-axis mirror for maximum efficiency at all wavelengths.
Optional pulsed lamp or laser port interface available.

Monochromators: Single-grating monochromators (standard). Monochromators are *f*/3.6 Czerny-Turner design with kinematic classically-ruled gratings and all-reflective optics. Optional double-grating units are available for highest stray-light rejection and sensitivity.
The following specifications are based on 1200-grooves/mm gratings:
Resolution 0.3 nm
Accuracy ±0.5 nm
Step size 0.0625 nm min. to 100 nm max.
Wavelength repeatability 0.3 nm
Slit settings 0–30 nm continuously adjustable via computer
Speed 150 nm/s
Range 0–950 nm (physical)
Gratings*
Excitation 330-nm blaze (220–600 nm range)
Emission 500-nm blaze (290–850 nm range)
*Other gratings available for wavelengths > 1000 nm.

Sample Compartment: T-format sample compartment with excitation reference detector R and signal detector S. The T-format design allows a second emission-detection channel T to be incorporated. The sample compartment also has a removable gap-bed assembly for sampling accessory replacement.
Optional front-face collection assembly available.

Detectors: Reference photodiode for excitation correction from 200–980 nm, selected for stability.
Emission detector is a side-on R928P for high sensitivity in photon-counting mode (180–850 nm).
Linearity to 2 × 106 cps; < 1000 dark counts/second
Other PMTs to 1100 nm, with thermoelectrically cooled option.
Solid-state detectors for higher wavelength emissions. CCD multichannel detector for instant emission spectra and sample spatial information.

Lifetime Options
Frequency domain:

Lifetime range: 10 picoseconds to 10 microseconds
Frequency range: 0.2 to 310 MHz.
Time domain:
Lifetime range: 200 picoseconds to 0.1 milliseconds
Minimum resolution: < 7 picoseconds/channel

High voltage

S or T detectors, ≤ 1200 V for R928P

Excitation shutter (standard)

Computer-controlled

Integration time

1 ms to 160 s

Sensitivity

Double-distilled deionized ICP-grade water Raman scan 4000:1 S/N minimum at 397 nm, 5-nm bandpass, 1 s integration time, background noise 1st standard deviation at 450 nm.

Instruction Manual & Analysis software: available upon request from laboratory.