pc1™

PHOTON COUNTING STEADY-STATE SPECTROFLUORIMETER

PC1 is a compact benchtop photon counting spectrofluorimeter for research applications demanding the highest sensitivity.

PC1 optical design and automatic instrument control are state-of-the-art for steady-state fluorescence measurements.

Fully Automated for Steady-State Applications

- Corrected excitation and emission spectra
- Polarization (anisotropy) measurements
- Slow and fast kinetics
- Synchronous luminescence spectra
- Intensity measurements at fixed wavelengths
- Dual-wavelength excitation (emission) ratiometric measurements

User-Friendly Software

PC1 includes *Vinci – Multidimensional Fluorescence Spectroscopy*, a powerful software package that provides several ready-to-use routines for reliable, user-friendly acquisition of complex fluorescence data:

- Spectra (excitation, emission, synchronous, time-resolved and polarization)
- Measurements at fixed wavelengths (intensity and polarization)
- Measurement of kinetics
- Time-resolved measurements (lifetimes and rotational correlation times)

User-Defined Acquisition Protocols

One-dimensional and multi-dimensional data acquisition with user defined protocols. The user can select any of the following experimental combinations:

- Fluorescence Intensity
- Polarization/Anisotropy
- Ratiometric Measurements

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- Excitation (Emission) Wavelength and/or any of the following:
- Emission (Excitation) Wavelength
- Sample Concentration, pH, Pressure & Temperature

Key Features

- A compact footprint and short optical pathlength for maximum sensitivity and efficient light coupling into the sample

- T-format and parallel beam design for fast and precise polarization measurements

- Full automation of instrument components including: cuvette holder, polarizers, shutters, filterwheel, monochromators and stirrers

- PC-controlled integration of temperature bath, titrator, stopped-flow apparatus and pressure pump

- Fast kinetic measurements with one millisecond resolution in photon counting mode

- 80 MHz pre-amplifier discriminators delivering linearity up to eight million counts per second on each channel

- Upgradable for time-resolved measurements with picosecond resolution

Vinci, the Complete Software Solution for Steady-State and Time-Resolved Applications

A powerful and flexible multidimensional fluorescence spectroscopy software with ready-to-use routines for data acquisition and analysis.
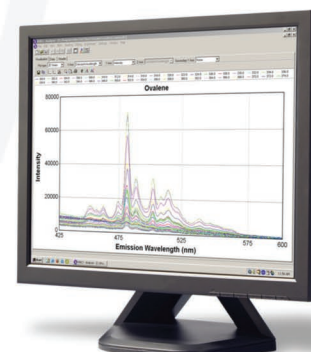
Software Specifications

Instrument Automation
PC1 is the instrument of choice for steady-state research applications. All hardware components, including external devices, are automated and PC-controlled.

Adaptive Measurements
The operator has the option to choose between two Signal Quality Parameters: *Standard Deviation* and *Time*. Upon reaching either a pre-defined standard deviation or measurement time, the PC1 automatically continues the routine to the next data point.

Instrument Diagnostic and Noise Detection
Vinci includes routines for analyzing the instrument's performance, allowing the user to monitor data acquisition and noise level during the entire measurement. If sample saturation occurs the signal level is adjusted accordingly.

User-friendly Acquisition
A sequence of measurements is acquired through a one-time setup of the experiment file, allowing for the automatic acquisition of multiple data sets.

Personalized Log-on
With its unique system memory design, Vinci allows user-specific access. In multi-user environments each user may perform measurements with a personalized instrument configuration.

Data Analysis

User-Defined Data File Operations
- Reformat
- Normalization
- Smoothing (average, Savitzky-Golay)
- Derivative (nth-order)
- Integration (area, average and standard deviation)
- Convolution with a user-defined function
- Spectral correction
- Conversion to wave numbers

Data Display & Export

- 2D and 3D display with user-defined colors and fonts
- 3D surface rotation and in/out zooming
- 3D display of user-defined functions
- Cursor identification of XY spectra coordinates
- Export to gif, png, jpeg, bitmap and metafile formats

Instrument Specifications

Light Source: 300 W xenon arc lamp with 45 mW/nm brightness at 275 nm.
Optional: Ozone free lamp, lasers, laser diodes and LEDs

Monochromators: Highly efficient single concave holographic grating monochromators
- Fixed slits ranging from 0.4 nm to 32 nm bandpass
- Wavelength range: 200 nm to 1200*nm (*depending on selected grating)
- Stray light: 10^{-5} outside the band pass of the 632.8 nm HeNe laser line
- Wavelength accuracy: ±0.2 nm
- Wavelength reproducibility: ±0.25 nm
- Slew rate: 160 nm/s

Optional: Double-grating monochromator

Focusing & Collection Geometry: Parallel beam design for precise polarization measurements

Polarizers: UV grade Glan-Thompson with L/A=2.0

Detectors: Side-on photomultiplier tubes
Optional: Cooled PMT, microchannel plate detector

Detection Modes: 80 MHz pre-amplifier discriminators for fast photon counting acquisition on three independent channels

Sensitivity: S/N ratio greater than 5000:1 on the Raman spectrum of water with photon counting and cooled PMT

Dynamic Range: Linear up to eight million counts per second

OS Requirements: Windows XP, Windows 7

Power Requirements: Universal power input of 110-240 V, 50/60 Hz, 400 VAC

Dimensions: 885 mm (L) x 600 mm (W) x 330 mm (H)

Weight: 43 kg

Information & specifications are subject to change without notice.

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For more information and a complete list of accessories for PC1, please visit www.iss.com.