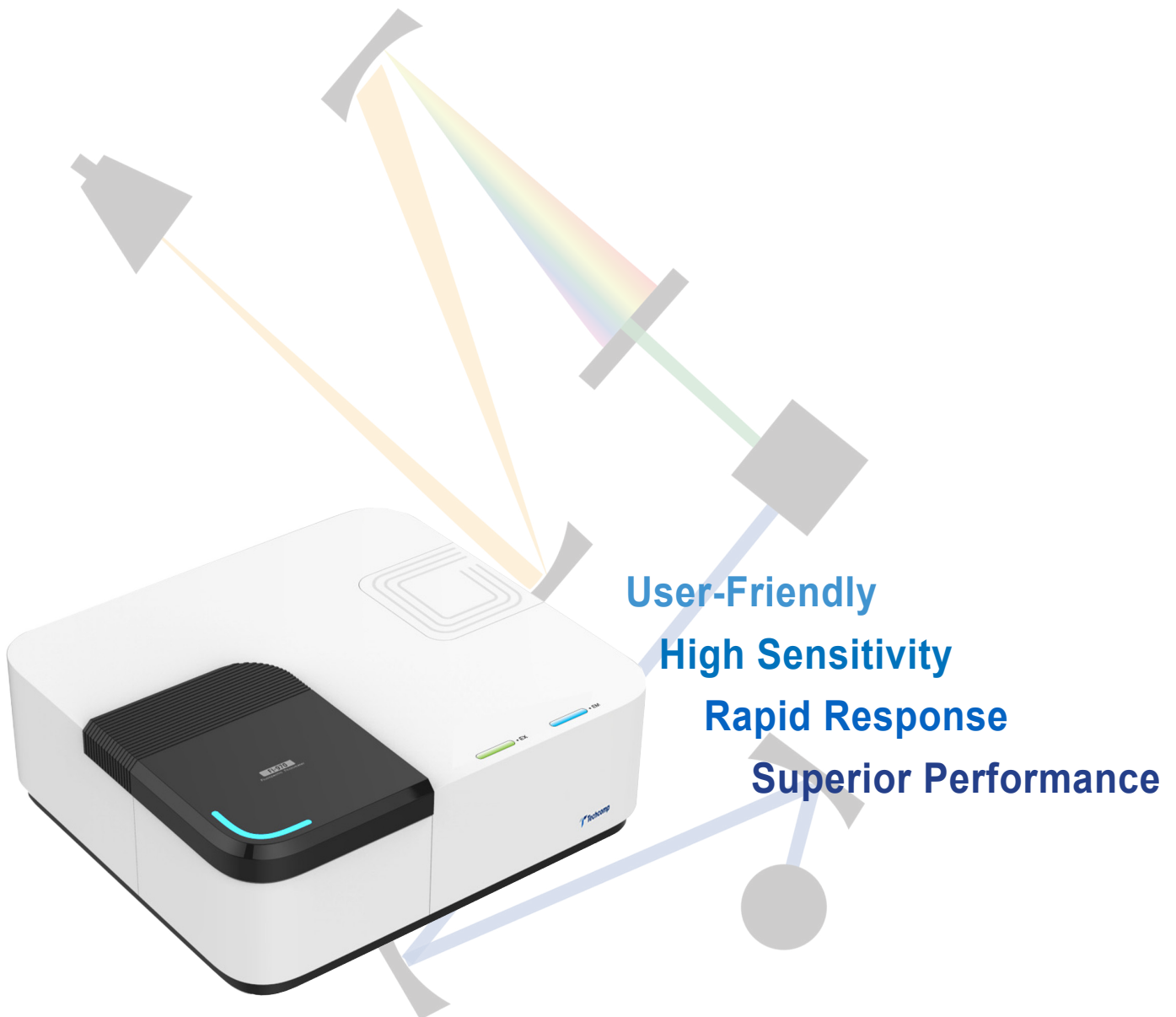
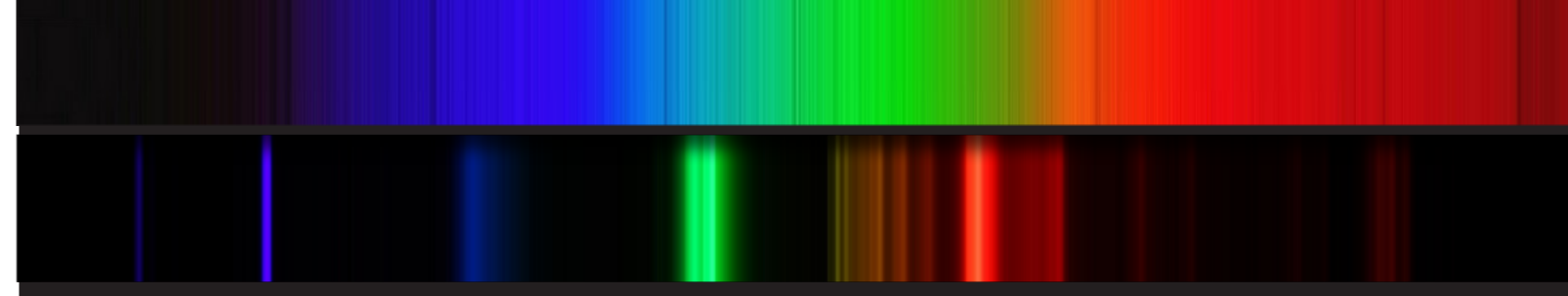


FL970  
Fluorescence Spectrometer





## Introduction

# SPECTROSCOPY

## Multifunction – Integrating wide variety of spectral techniques

### Techcomp FL970 Fluorescence Spectrometer

Fluorescence Spectrometer is an essential instrument in various qualitative and quantitative analyses. Techcomp FL970 is a versatile, high performance, user-friendly Fluorescence Spectrometer. It is designed and built to satisfy both routine analytical works and ever-changing research requirements.

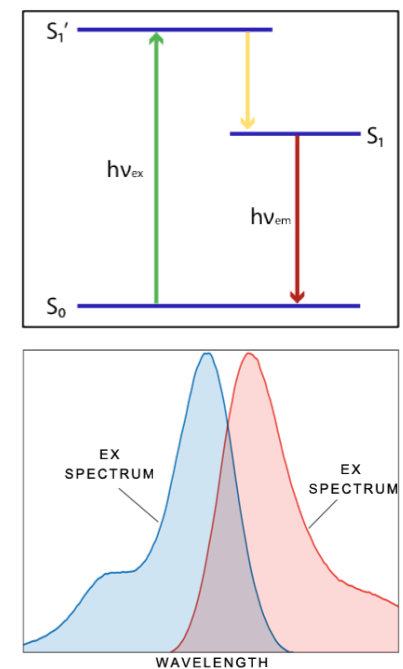
- ✓ Extended wavelength range of measurement
- ✓ Exceptional fast scan rate
- ✓ Excellent sensitivity
- ✓ 3D scanning and analysis functions
- ✓ Wide selection range of accessories



- High sensitivity and extended wavelength range for the measurement of fluorescence, bioluminescence, chemiluminescence and electro-luminescence
- High speed scanning and data acquisition for 3D fluorescence measurement
- Powerful software and wide selection range of accessories for various applications

## Superior Performance – High Sensitivity, Accuracy and Speed

- 150W Xenon Flash Lamp
- Variable slits width with increments of 1nm
- Extended wavelength range up to 900nm
- High signal to noise ratio of 1200 : 1 (RMS) / 15000 : 1 (RMS(GB))
- Super-fast scan speed of 30,000 nm/min

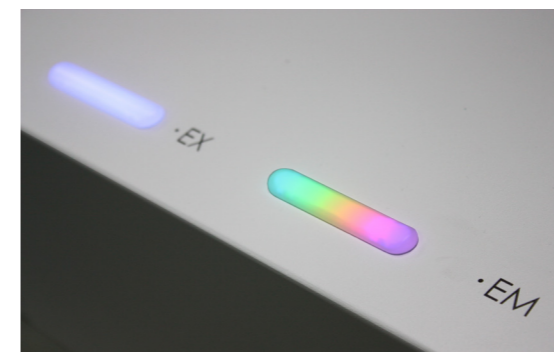


## Intuitive Operation Software – Smooth, User-Friendly and Flexible

- Powerful multi-language software FL Analyst
- Automatic initialization and performance check
- Large sample chamber for various measurement methods and applications

## Unique Wavelength Indication

- Dynamic and colorful LED lamps display the real time excitation and emission wavelengths



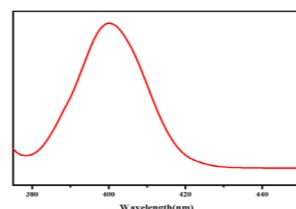
# Rapid and reliable optical system



Excellent Signal-to-Noise ratio / 1200:1 (RMS) / 15000:1 (RMS(BG))

FL970 features high sensitivity by the combining innovative design and high performance optical system components, high energy light source and best-in-class photomultiplier tube detector. High sensitivity allows the detection fluorescence signal at a small band width, which enhances accurate measurement even for samples of very low concentration.

Water Raman measurement is a commonly used method to determine the signal-to-noise ratio of fluorescence spectrometers.

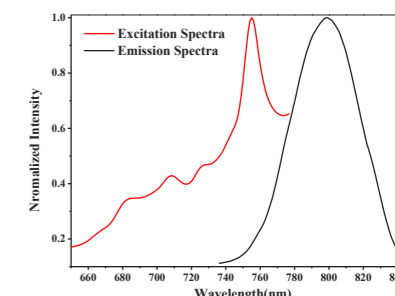


A Water Raman spectrum produced by FL970



Photomultiplier Tube Detector with Extended Wavelength Range (up to 900nm)

A high performance PMT detector with wavelength range up to 900nm is the standard configuration for FL970.

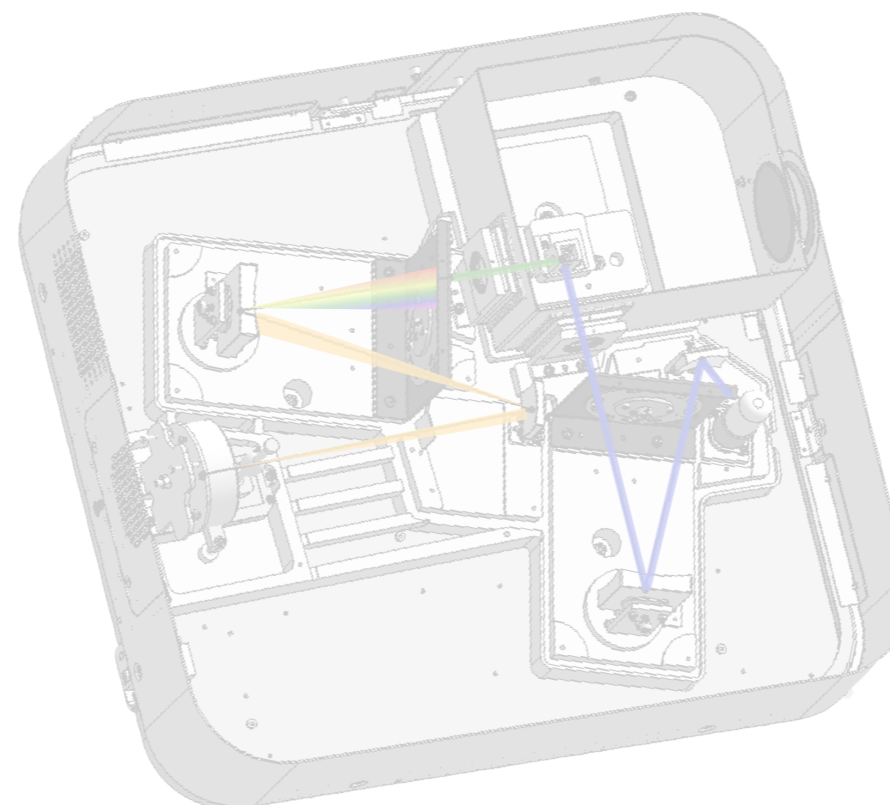


Excitation and emission spectra of Iodocyanine green (ICG)



150W Xenon Flash Lamp

The high energy Xenon lamp in FL970 ensures sufficient and stable light source which is crucial to high sensitivity and accurate measurement.



Rapid scanning rate (30,000 nm/min)

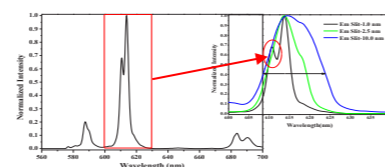
FL970 features rapid scanning rate up to 30,000 nm/min, allows the fastest measurement and construction of 3D spectra in its class.



Adjustable Resolution

The slit width of FL970 is easily adjustable by controlling of the operation software. It allows the change of resolution and enhances the spectral analysis.

Example: Europium is a rare earth with a sharp luminescent peak under excitation. Different shapes of the peaks can be obtained clearly by changing the resolution and other measurement parameters.



Fluorescence spectra of europium nitrate at different slit width



Seamless Design of Aluminum Cast Base Chassis

The base chassis of FL970 is a one-piece aluminum cast provides a stable and durable foundation for the optical system. The reliability of the instrument is tested and guaranteed.

Take it easy

Streamline measurement, advanced data processing, enhanced 3D scanning

- FL970 can integrate different accessories to fulfill varies kind of application.

-Qualitative, quantitative, kinetic study, spectrum analysis, at your fingertips.

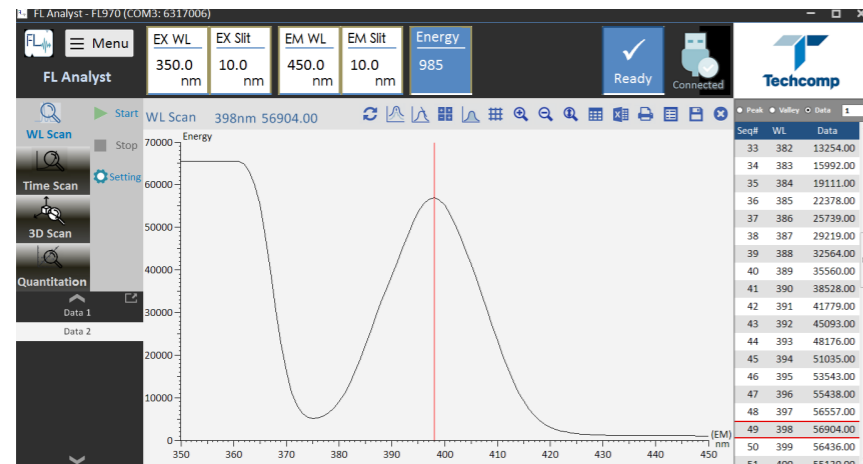
FL Analyst software

EM WL 450.0 nm	EM Slit 10.0 nm	EX WL 350.0 nm	EX Slit 10.0 nm	Energy 222
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Operator can monitor the instrumentation status via the FL Analyst software.

Seq#	WL	Data
30	379	7588.00
31	380	9090.00
32	381	10973.00
33	382	13254.00
34	383	15992.00
35	384	19111.00
36	385	22378.00
37	386	25739.00
38	387	29219.00
39	388	32564.00
40	389	35560.00
41	390	38528.00
42	391	41779.00
43	392	45093.00
44	393	48176.00
45	394	51035.00
46	395	53543.00
47	396	55438.00

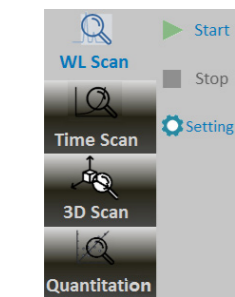
Data column



Key Icon – user friendly



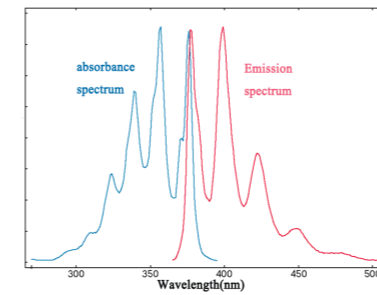
Connection status – clear



Analytical mode - direct data readout

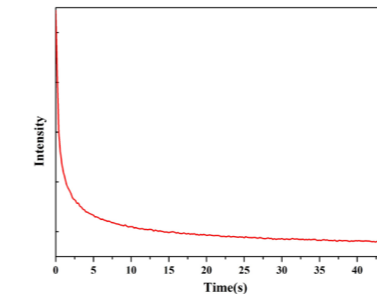


Toolbar for various icons



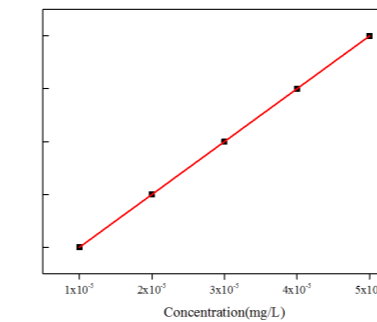
Wavelength scanning mode

- Automatically collect a series of excitation, emission and synchronous scans
- Sample spectrum analysis
- Perform molecular analysis by various accessories e.g. Anisotropic, thermal quenching



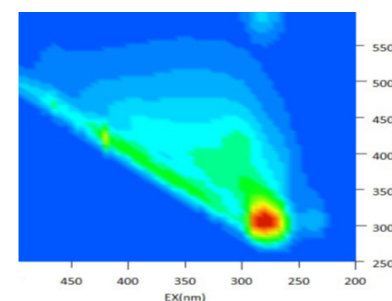
Real-Time scanning mode

- Resolution of time down to 20ms, key feature for kinetic scanning.
- A wide range of temperature control accessories can be coupled, e.g. water bath, Peltier control, hot chamber.



Quantitation mode

- Easy and convenience
- Rapid and precise measurement
- Automatically calculate the sample concentration



3D scanning mode

- FL970 can be used for fingerprint analysis, which included all the fluorescence data
- Easily acquire and target the fluorescence spectra
- Rapid scanning rate 30,000 nm/min greatly reduce the running time

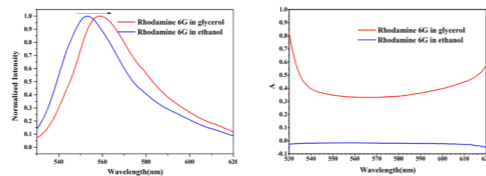


### Applicable to wide range of applications

- FL970 can fulfill entire range of applications
- Application included : water quality control, food safety, chemical analysis

#### Life science application – Polarization of Rhodamine 6G

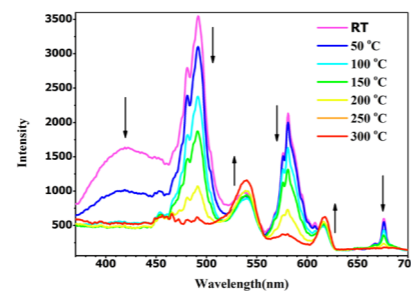
Polarization and anisotropy measurements are often used to estimate the rate and extent of rotational relaxation during the lifetime of the excited state. These have been used to quantify biochemical properties such as protein denaturation, protein-ligand association reactions, and the rotational rates of proteins.



An anisotropy study by dissolving Rhodamine 6G in various kind of organic solvent.

#### Material science – Study of quenching fluorescence

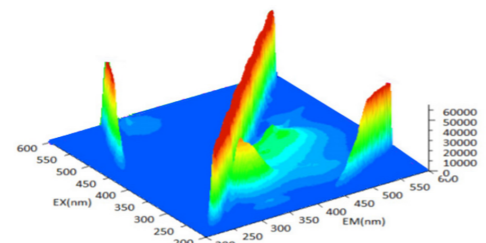
The fluorescence intensity can be affected by quenching, such as temperature. The property of quenching can be used as a sensitive indicator in chemical assays. It's important to evaluate the relationship of temperature against fluorescence intensity.



LED Heat quenching of fluorescence powder

#### Environmental science – 3-D spectrum of CDOM in marine

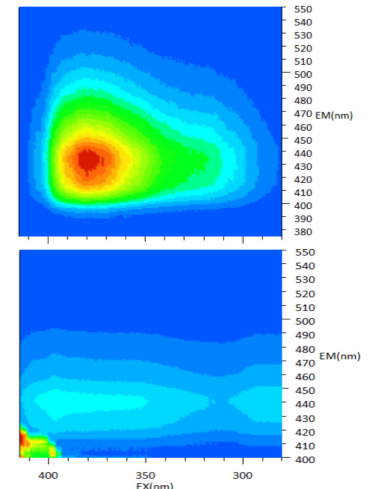
Chromophoric dissolved organic matter (CDOM), which is the fraction of dissolved organic matter that absorbs light over a broad range of ultraviolet (UV) and visible wavelengths. Measuring CDOM is important because concentrations of CDOM affect aquatic vegetation, coral reefs and other marine communities. Fluorescence spectroscopy can measure CDOM in both quantitative and qualitative. 3-D spectrum gives the entire range pollutant and amount for monitoring.



3-D fluorescence spectrum of sea water sample

#### Industrial sector – Fluorescence brightener

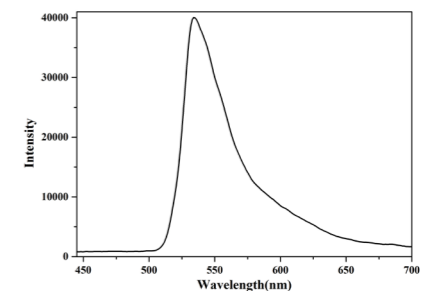
Fluorescence brightener is a fluorescence dye, which is common used in household product. One of a commercial brightener – VBL, is a potential carcinogenic substance once entry to human, especially the liver tissue. It's also a pollutant for environment. As a result, monitoring the discharge and consumption in manufacturing process is needed. FL970 can analyze and quantify the fluorescence brightener.



3-D spectrum of VBL and 3-D spectrum of VBL in printer paper

#### Food science – Determination of Vitamin B2

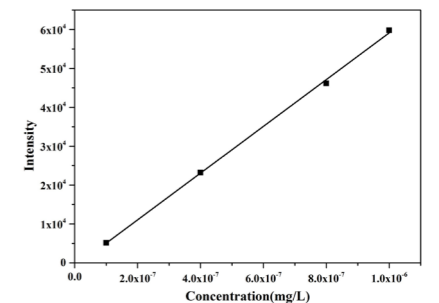
Vitamin B2, or riboflavin, is important for a healthy metabolism, and for maintaining body health. Vitamin analyses are particularly important for estimating dietary intakes, determining nutritional status and food labeling regulation.



Food science – Determination of Vitamin B2

#### Pharmaceutical industry – Quantitation of Quinine

Some pharmaceutical products can be determined by fluorescence spectroscopy method. Quinine is a medication used to treat malaria and babesiosis. It's chemically stable even listed as reference material and use for fluorescence analysis. Alternatively, Quinine reference standard is used for calibration and inspection of fluorescence spectrometer.



Linear regression of Quinine



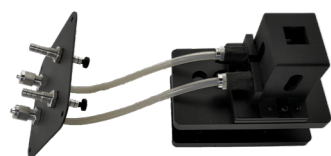
# FL970 Fluorescence Spectrometer – Specification Sheet

## You can do it all with FL970



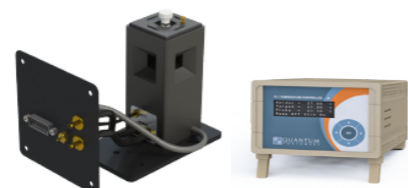
FL970 designed with a large sample compartment, which is adaptable for extensive selection of accessories

Dimension of sample compartment : 247mm L\* 215mm W\*172mm H



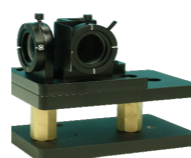
### Thermostated cell holder with circulating bath

Enables controlling the sample cell (10mm) temperature. Satisfy the testing requirement of biological sample (80 °C).



### Peltier control programmable temperature cell holder

Operation temperature is 40 - 110°C.



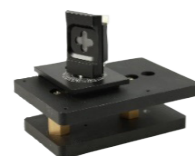
### Polarizer

Polarization application focus on protein, enzymology, cellular study.



### Trace solid sample holder adjustable angle (fit to standard cuvette holder)

Designated for powder, thin film type sample. Light beam angle can be adjusted 0-90° horizontally.



### Solid sample holder angle adjustable

Designated for powder, thin film type sample. Cell angle can be adjusted 0-90° horizontally.



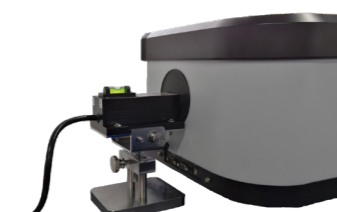
### Solid sample holder (high temperature)

Addressing the needs of thermofluorescent experiment with temperature range : 25-300°



### Micro cells

As low as 100uL sample volume.



### Port extension

Integrated inside the sample compartment, which is extendable for coupling Laser as excitation source.



### Fiber optics

Best choice for fluorescence fiber optic measurements. Suitable for remote measurement of sample that cannot put inside the sample compartment.

<b>Principle</b>	Computer controlled fluorescence spectrometer for measuring emission signal or spectra of a sample illuminated by an excitation light	
<b>Fluorescence mode</b>	Fluorescence, Luminescence (Chemiluminescence, Bioluminescence, Electroluminescence)	
<b>Source</b>	High intensity 150W continuous xenon lamp	
<b>Optical</b>	Double continuous spectroscopic monochromator	
<b>Gratings</b>	Holographic concave grating Excitation: 64x64 mm, blaze at 400 nm Emission: 64x64 mm, blaze at 400 nm	
<b>Wavelength range</b>	200-900 nm	
<b>Wavelength accuracy</b>	± 2.0 nm	
<b>Wavelength reproducibility</b>	± 1.0 nm	
<b>Detector</b>	Photomultiplier tube R928, continuously adjustable negative high voltage 0-900V	
<b>Spectra bandwidth</b>	Excitation: selectable 1, 2.5, 5, 10 20nm Emission: selectable 1, 2.5, 5, 10 20nm	
<b>Wavelength scan speed</b>	Max 30,000nm/min Selectable from 30, 60, 240, 1,200, 2,400, 12,000, 30,000nm/min	
<b>Scan Interval</b>	0.2-10.0 nm	
<b>Sensitivity</b>	Signal-to-noise level using the Raman peak of water, excitation 350nm, is 1,200:1 RMS measuring noise on the Raman peak, 15,000:1 RMS measuring noise on the background (BG).	
<b>Linearity</b>	0.995 (quinine sulfate solution)	
<b>Baseline drift</b>	<0.3% (within 10 minutes)	
<b>Fluorescence value drift</b>	<1.5% Ex: 350 nm, Em: 450 nm (within 10 min)	
<b>Fluorescence value range</b>	0 to 70,000	
<b>Instrument dimensions</b>	258mm height, 667mm width, 601mm depth	
<b>Sample compartment dimensions</b>	172mm height, 247mm width, 215mm depth	
<b>Instrument weight</b>	47kg	
<b>Control Software</b>	FL Analyst (English, Chinese)	
<b>Windows Operation System</b>	Windows 7, 10®	
<b>Measurement mode</b>	Wavelength scan	Excitation WL scan, Emission WL scan, Synchronous WL scan, 3D Scan
	Time scan	Fixed wavelength time scan
	Quantitative	Quantitative analysis, calibration curve (linear), parameters input, sample blank measurement, sample measurement, data deletion, standard curve coefficient input
	3D Scan	Contour map view, Aerial view
<b>Spectra Procession and Arithmetic</b>	Peak and valley detection, Trace, Scale, Smooth, Area Calculation, Derivative, Spectra arithmetic (+, -, ×, ÷), Parameters import and export, Display conversion	
<b>Visualize Wavelength Information</b>	Wavelength scanning indicator	
<b>Data export</b>	Export to Microsoft Excel®	
<b>Automatic self-diagnostics</b>	Self-diagnostics and offset	

## UV2600

### UV-VIS Spectrophotometer



- ❖ Techcomp UV2600 is a superior variable slit width UV-Vis Spectrophotometer. Quality product in mind at reasonable price from Techcomp
- ❖ High optical throughput C-T monochromator realizes good absorbance accuracy ( $\pm 0.002$  ABS) and exceptionally low stray light (0.010%T)
- ❖ Powerful control and analysis software
- ❖ Wide selection of accessories for applications of academic purpose, QA/QC and environmental monitoring

## UV2500

### UV-VIS Spectrophotometer



- ❖ Techcomp UV2500 is the successor model to the best selling UV2300 double beam UV-Vis spectrophotometer
- ❖ Stable optical system thanks to the aluminum alloy die-casting chassis
- ❖ Touch-screen operation with vibrant display and ease-to-use control system
- ❖ A reliable tool with high performance at reasonable price

# TECHCOMP GROUP

Engaged in the design, development, manufacture and distribution of analytical instruments, life science equipment and laboratory instruments. Operations are grouped into 2 business segments: manufacturing and distribution.



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