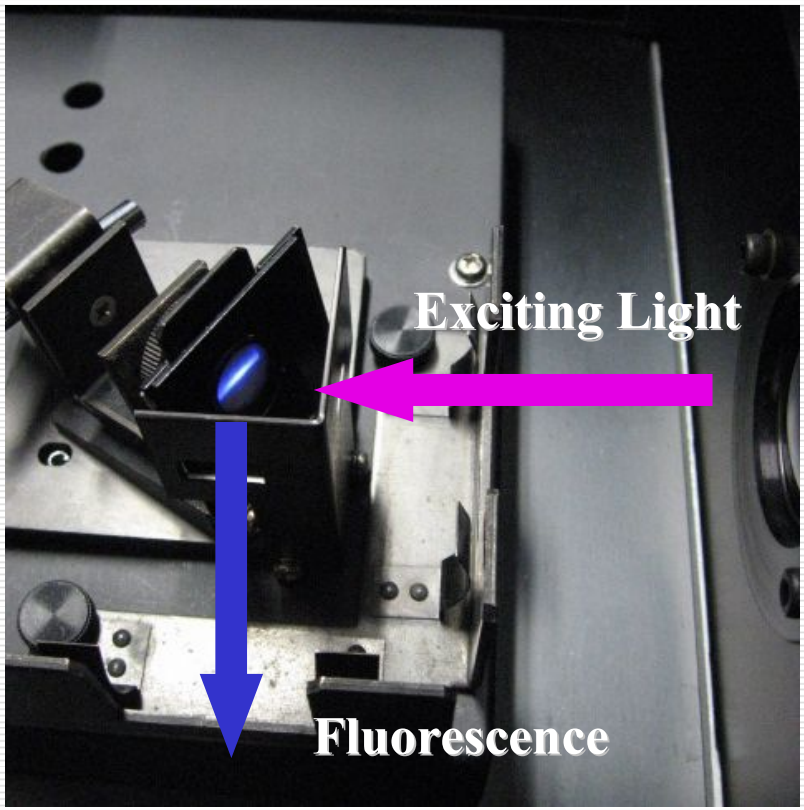
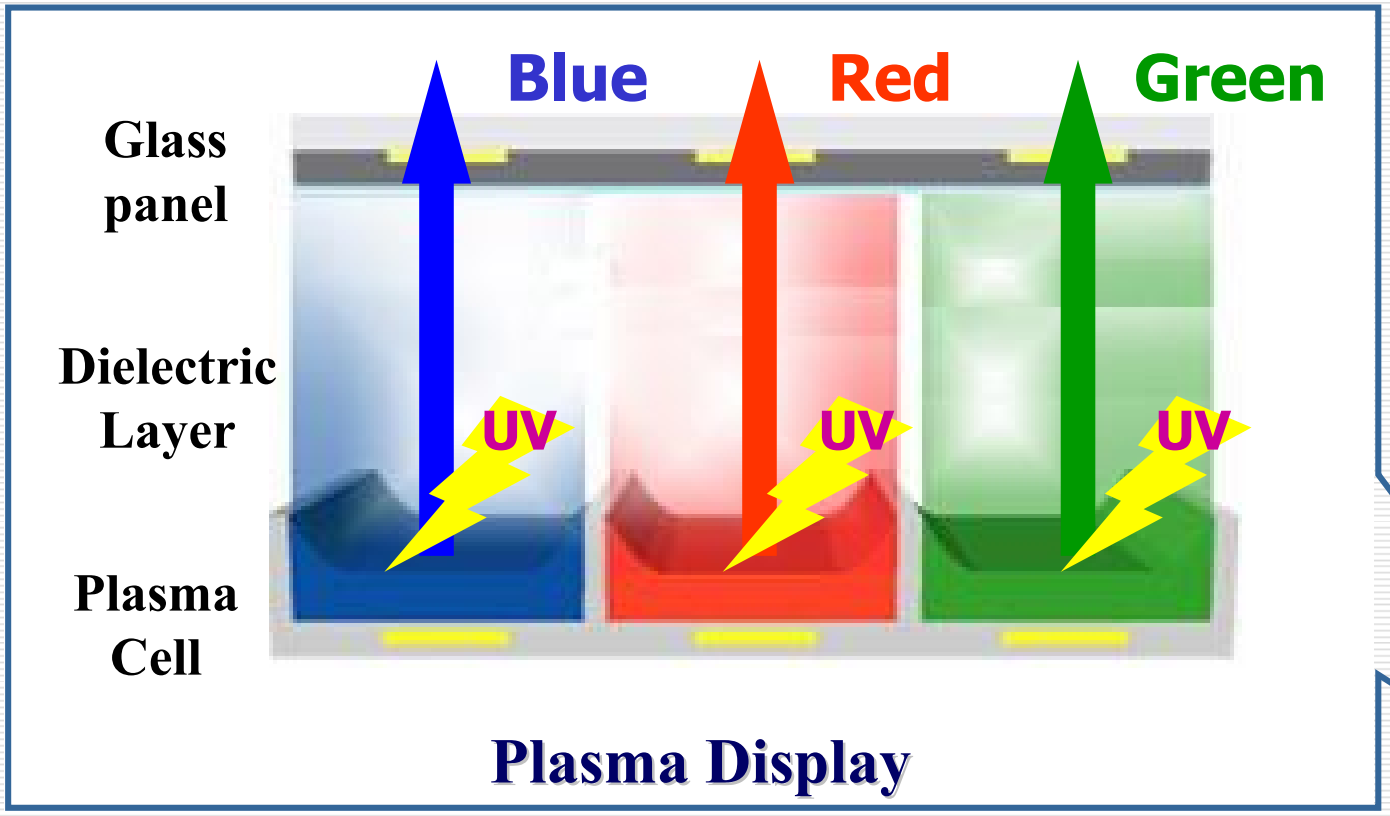
Measurement for Fluorescence Spectra of Solid Sample

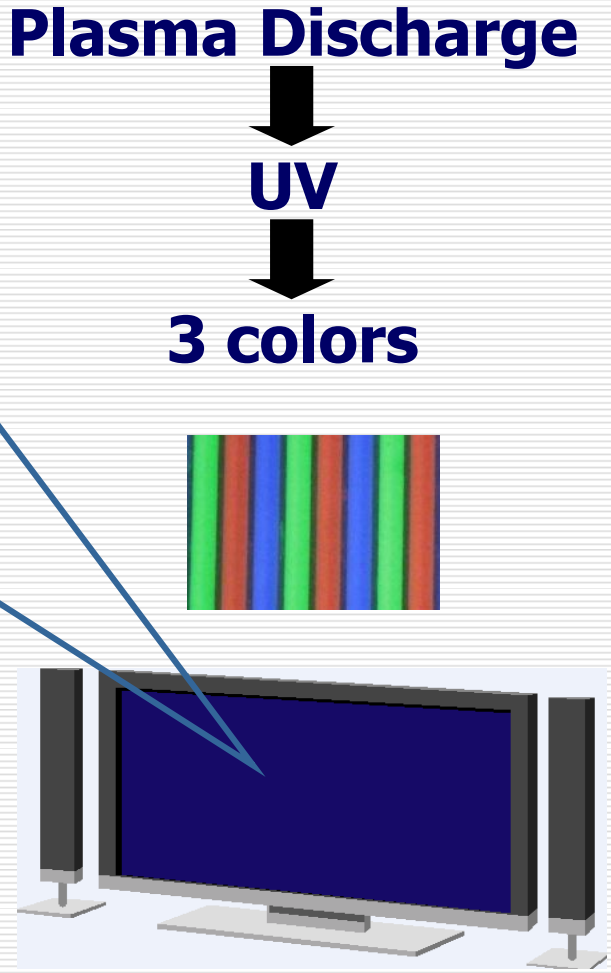
Fluorescence Spectra of Solid Samples



Solid Sample Holder

Fluorescence Spectra of Plate Samples



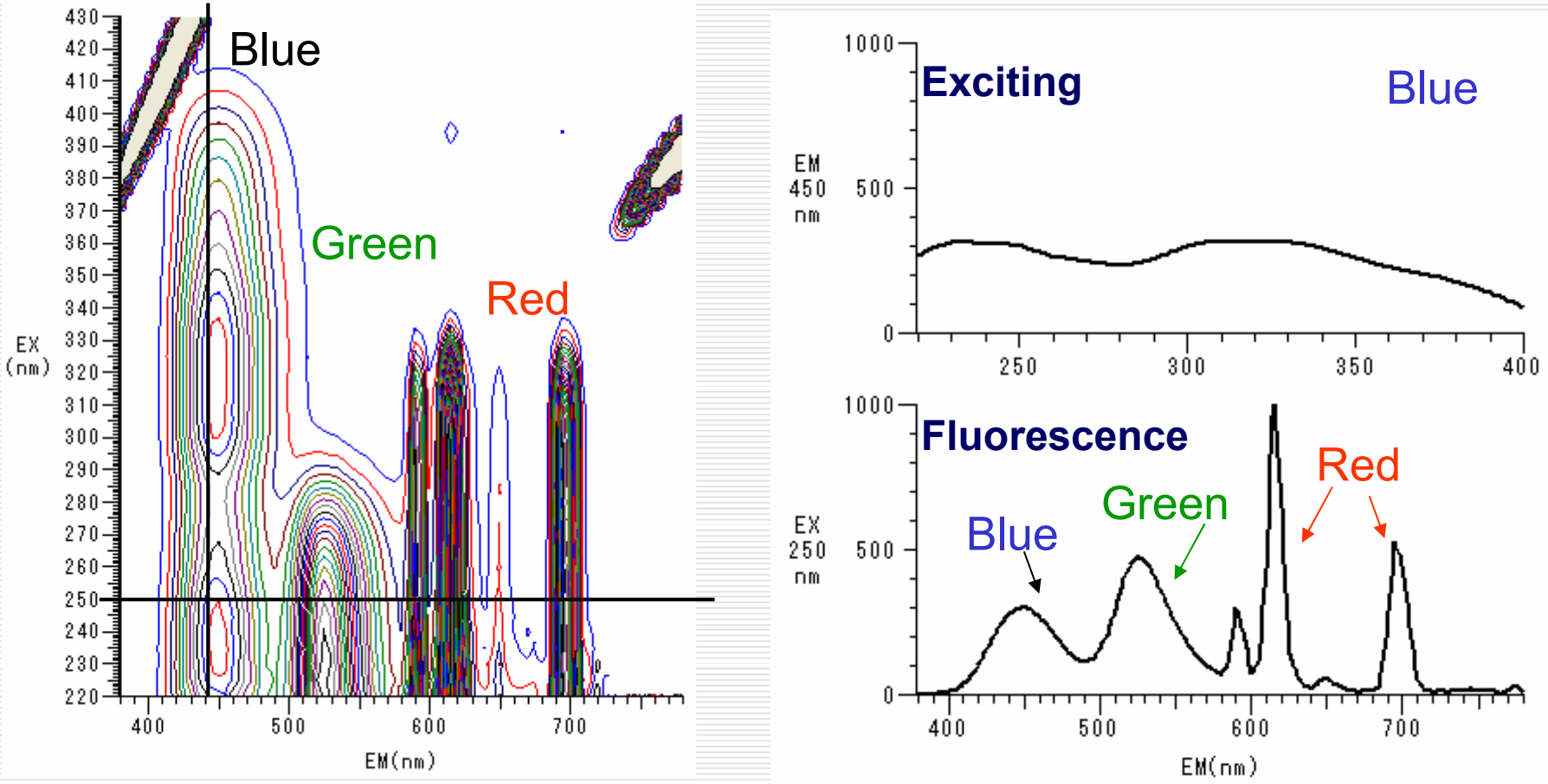


Measurement of Fluorescence Spectrum of PDP panel

- Development of plasma cell
- Quality control of display panel

Fluorescence Spectra of Plate Samples

High Speed scanning and shorter time measurement



3D Fluorescence Spectrum of PDP Display

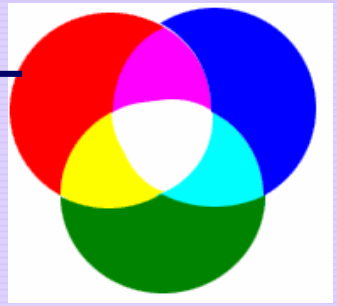
Fluorescence of White LED (Powder)

White LED

White Light

Blue + Yellow

Primary 3 Color



Yellow phosphor
: Convert Blue light to Yellow

Blue LED
: Blue lighting

Spectra of White LED

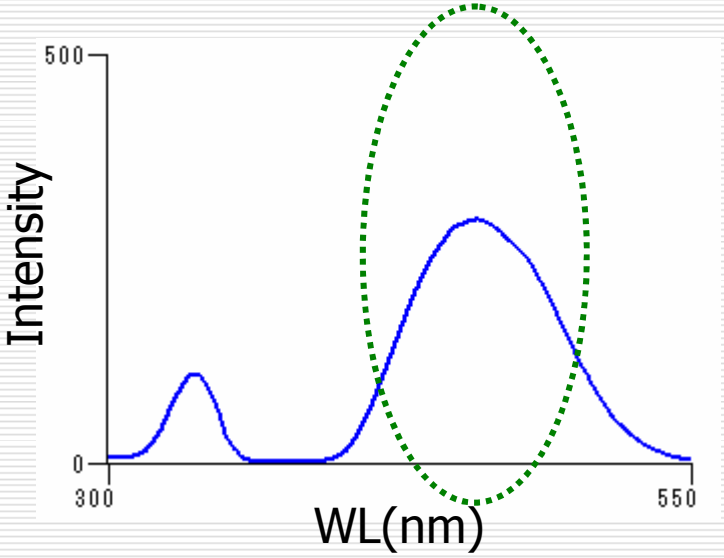
Measurement of Fluorescence and Exciting spectra for Phosphor evaluation

Fluorescence of White LED (Powder)

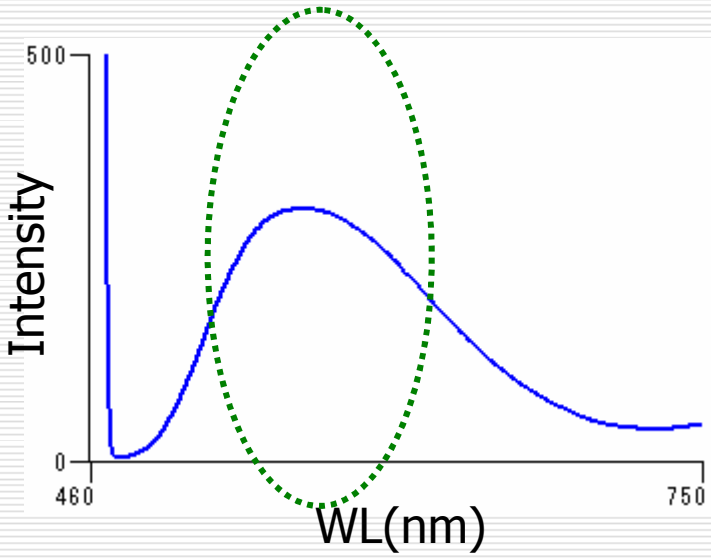
Measurement of the Phosphors YAG for white LED

Sample Holder for Powder

High Intensity with Blue Light

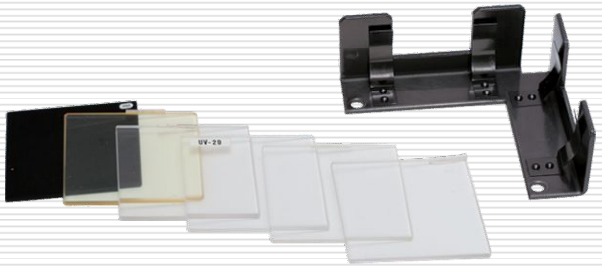


Yellow Light



Exciting and Fluorescence spectra of YAG (Powder)

Accurate Measurement of Spectra

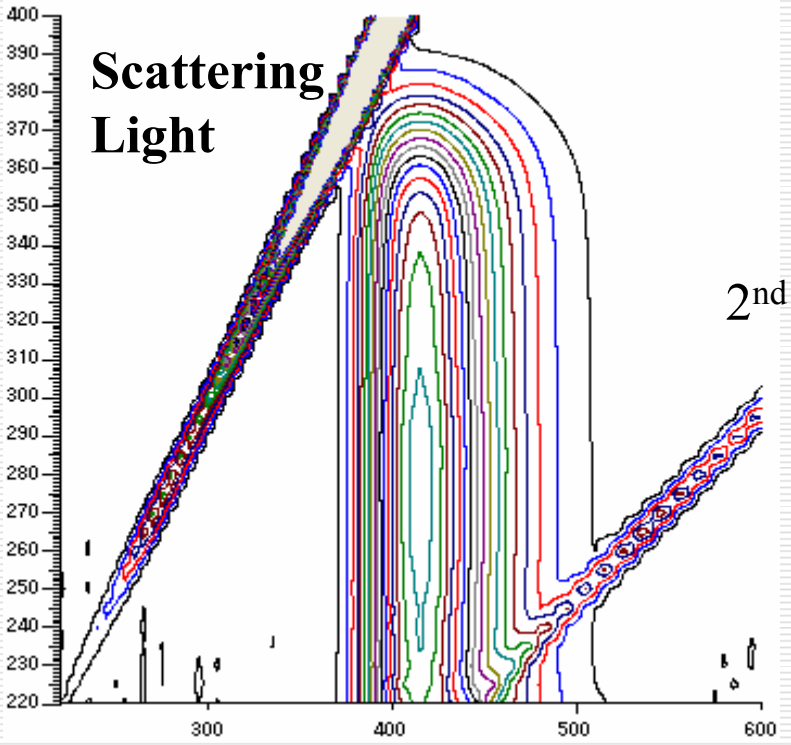


Accessory:

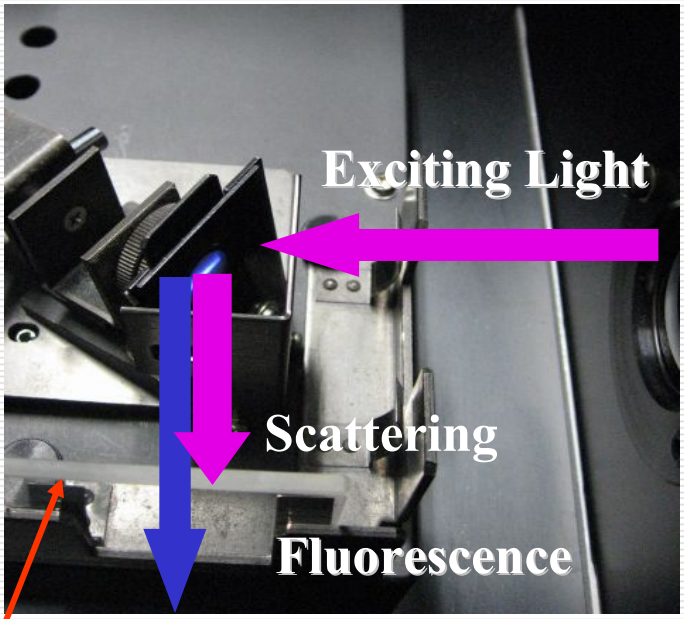
- Filter Set
- Spectra Correction Kit

Effect of Cut Filter

No Cut Filter



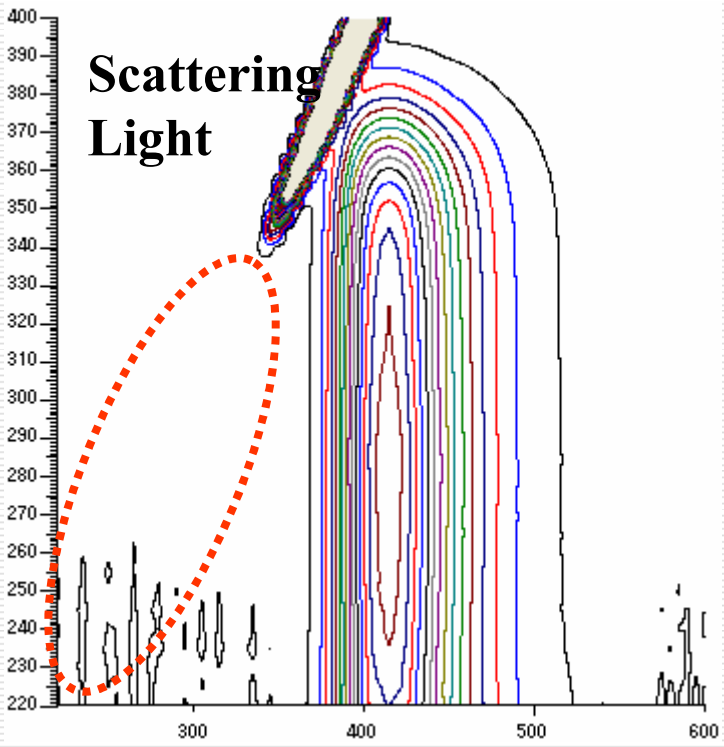
Na Salicylate Acid (Powder)



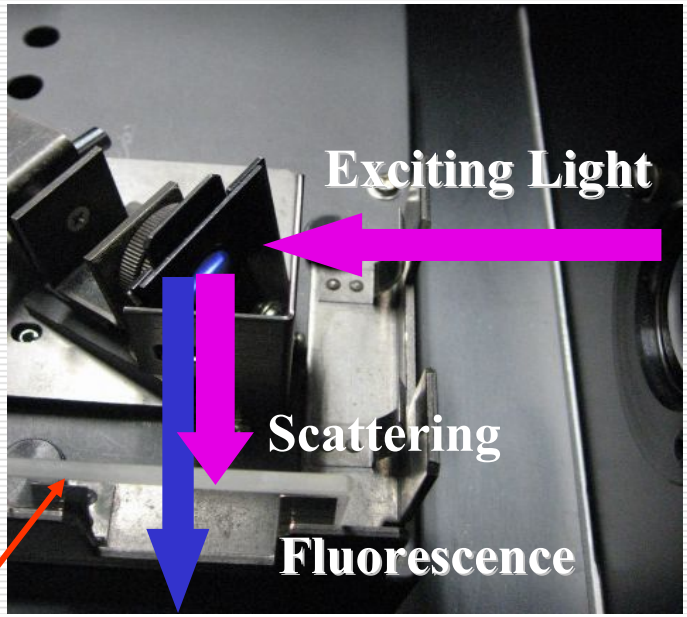
Cut Filter:
Pass Fluorescence and cut scattering light

Effect of Cut Filter

Filter (UV35)



Na Salicylate Acid (Powder)

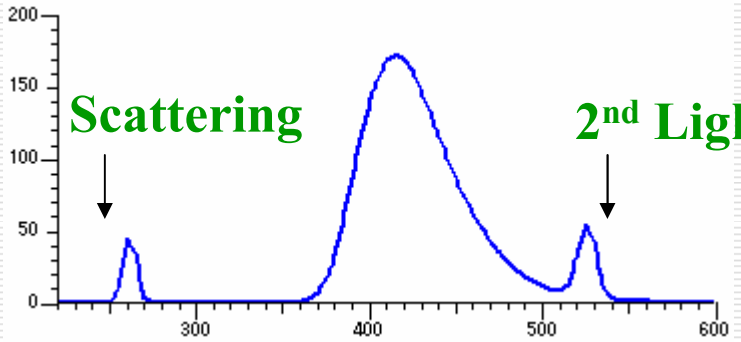


Cut Filter:
Pass Fluorescence and cut scattering light

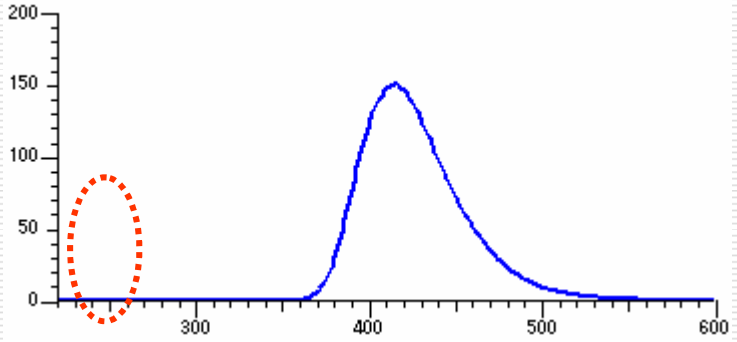
Cut the scattering light and measure the samples with less effect of 2nd light

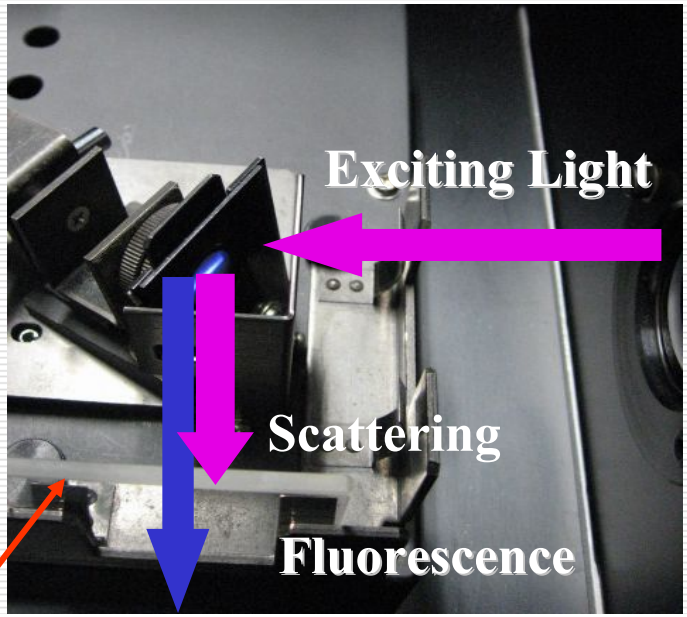
Effect of Cut Filter

No Filter



Filter (UV35)





Cut Filter:
Pass Fluorescence and cut scattering light

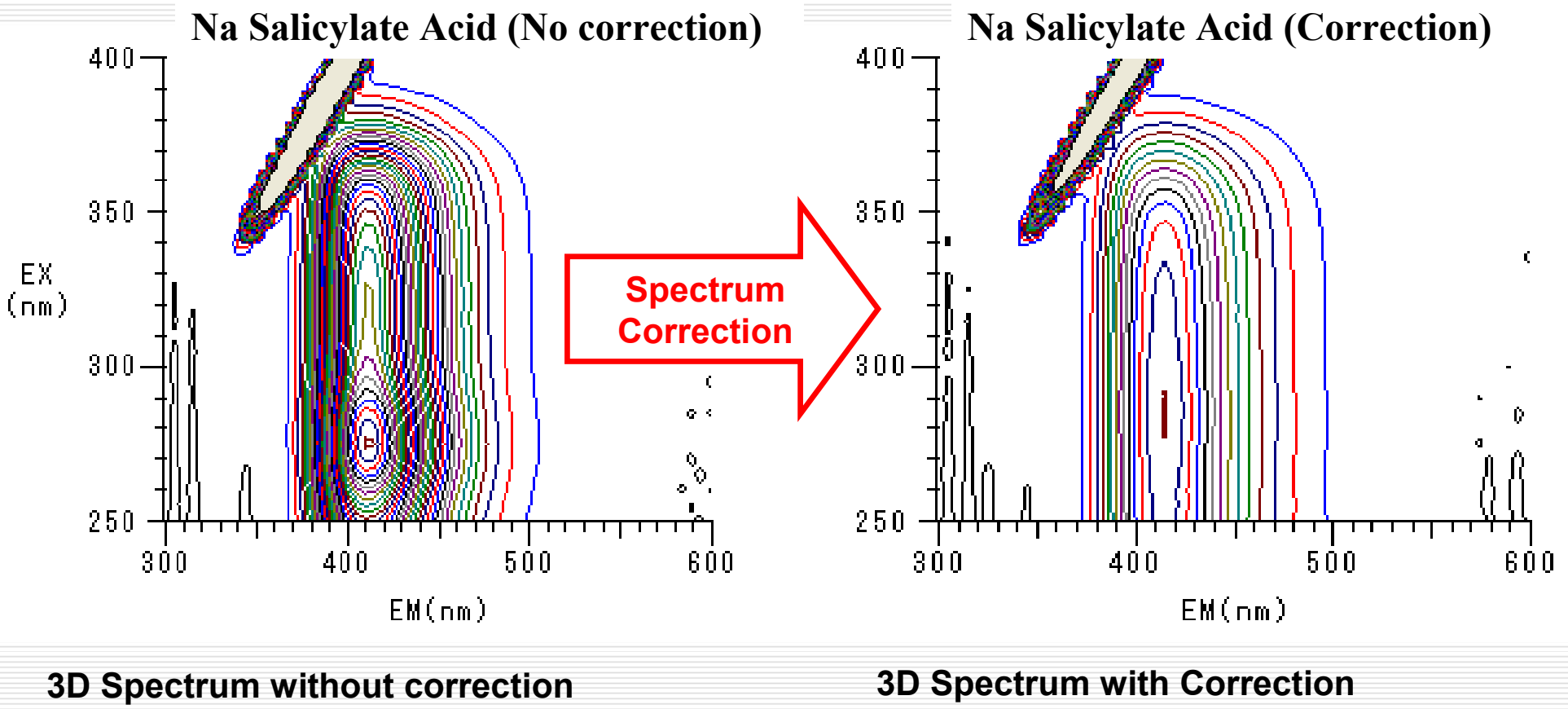
Cut the scattering light and measure the samples with less effect of 2nd light

Spectrum correction

Xe lamp and Detector have own characteristic and spectrum of Fluorescence spectrophotometer is effected on these factors.

Spectrum correction is necessary to get the real spectrum

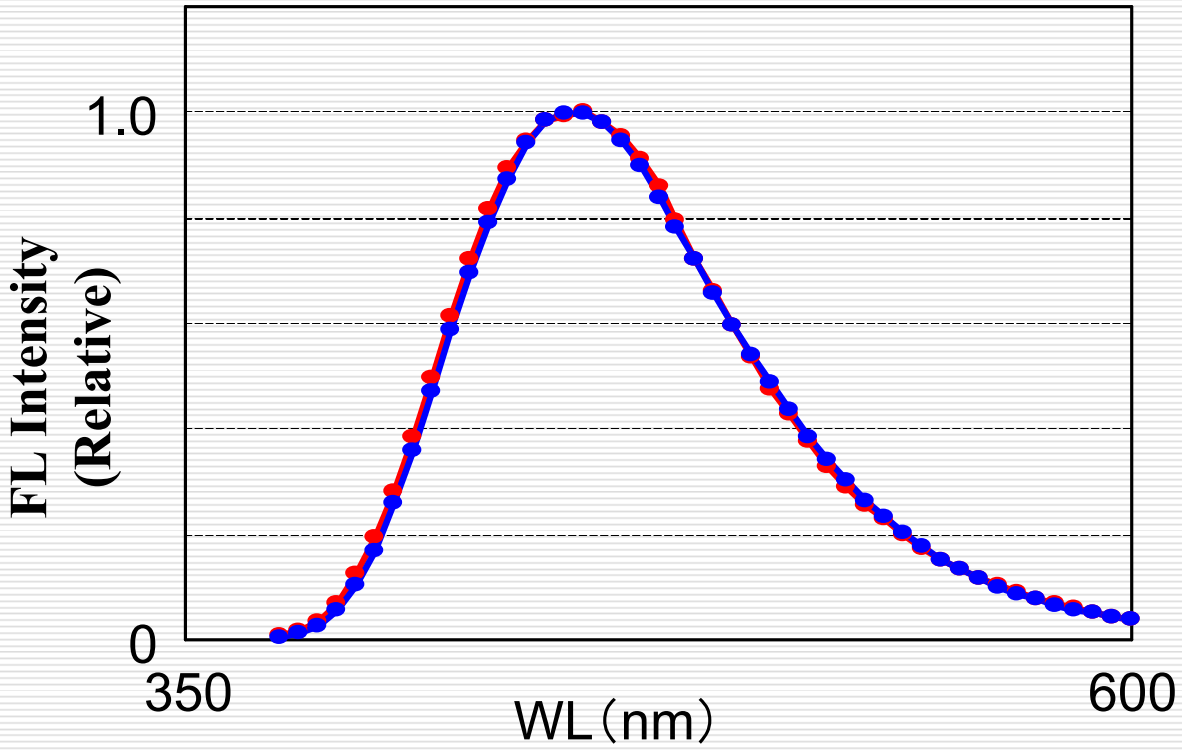
Spectrum correction



Characteristics of light source, optical components and detectors can be corrected and real spectrum can be measured.

Spectrum correction

Measurement of FL Standard Material (NIST SRM 936a Quinine Sulfate)



Measured Results

Certification

Measurement results of NIST SRM 936a (1 μg/mL)

It is possible to compare to other instruments, because of spectrum correction.

Measurement of luminescence spectrum

Measurement in Luminescence mode

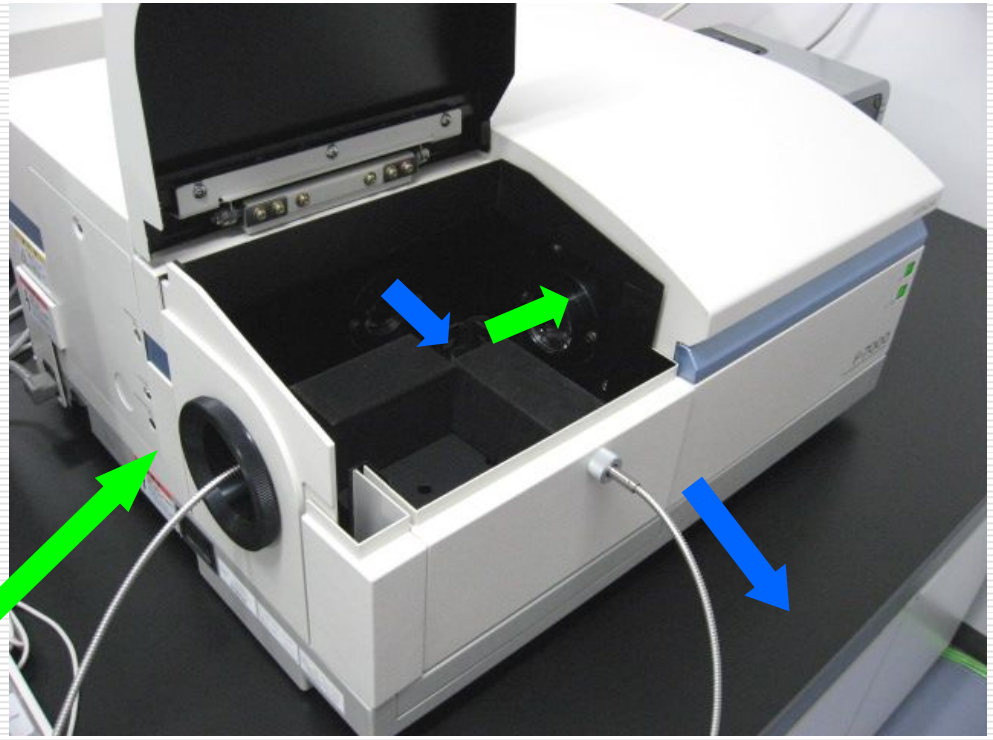
(It's necessary to shut the exciting light)

This is the custom order accessory

Large samples that cannot fit into sample compartment can be measured.

Measurement of Optical Fiber Accessory

↑ Sample measurement Attachment



Fluorescence

Exciting Light

WL: Ex, Em 300nm-750nm

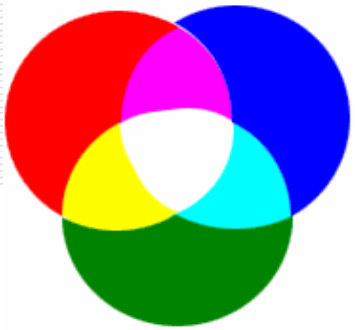
(Depends on Transmittance of Optical Fiber)

< Future >

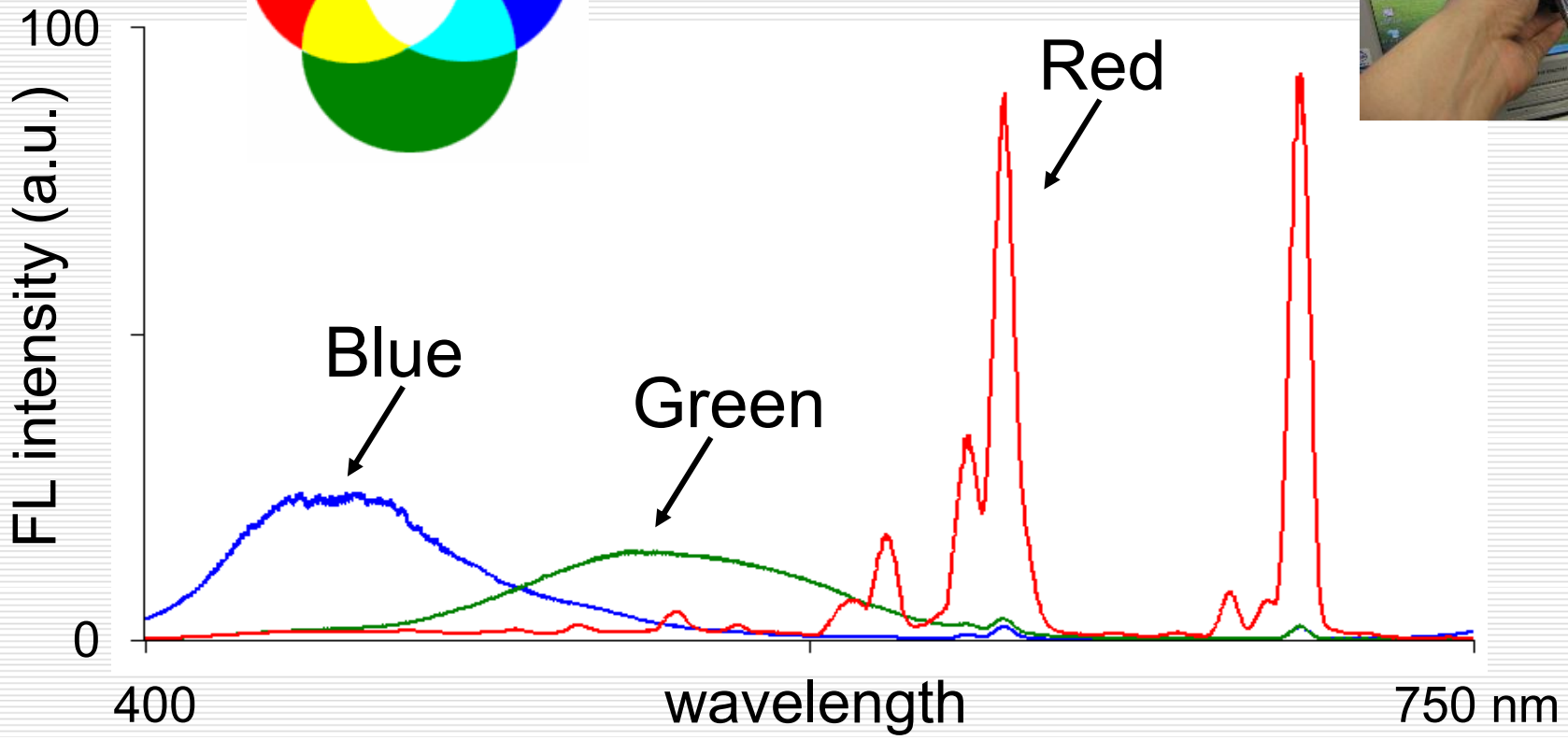
- Nondestructive measurement

- Measurable of Large sample

Measurement of Optical Fiber Accessory



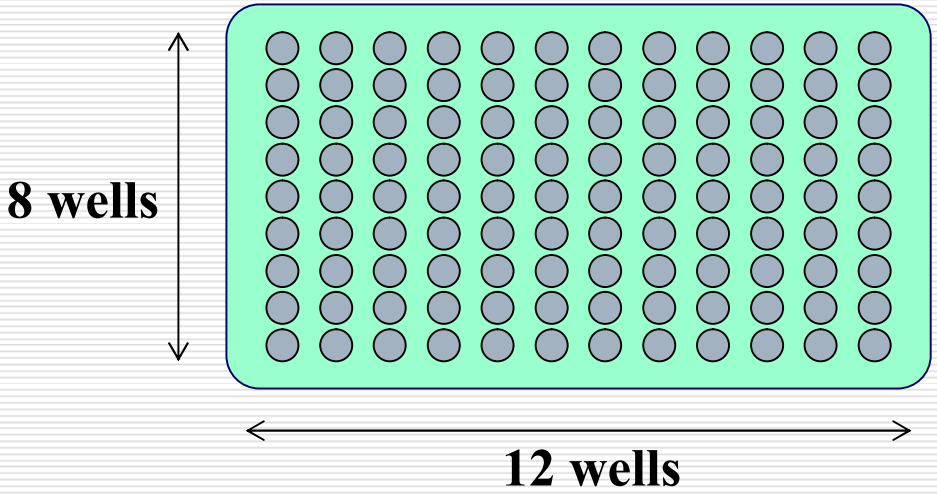
3 primary colors of light



Luminescence spectrum of CRT monitor

Measurement of FL distributions

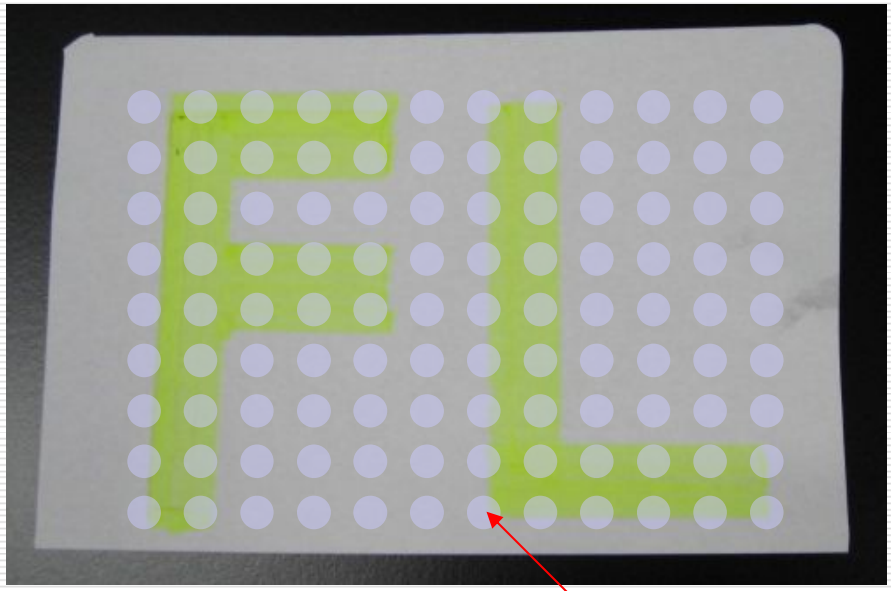
- Set solid samples into each wells of micro plate
- 96 samples (8 × 12 wells) measurement : Size of Micro Plate

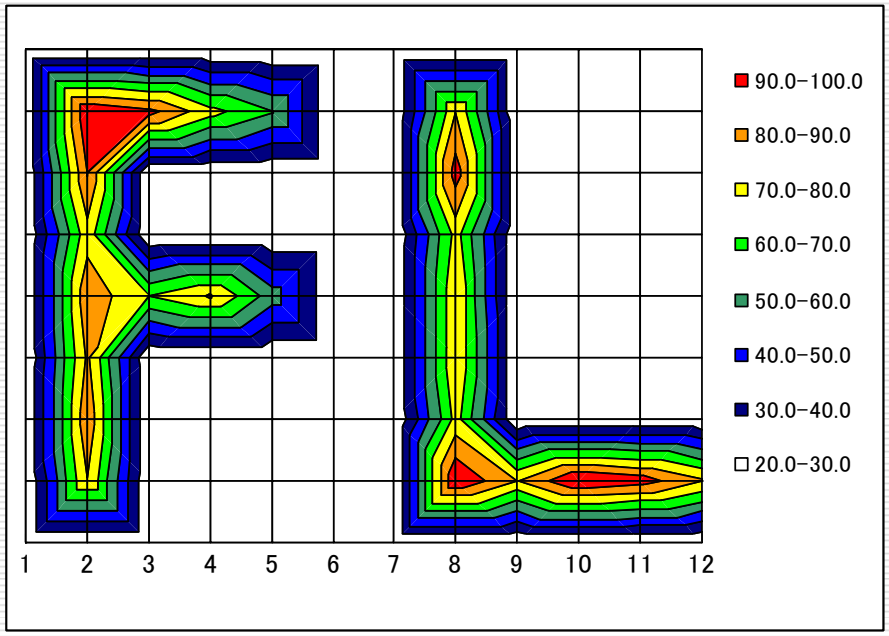


F-7000 with Micro Plate

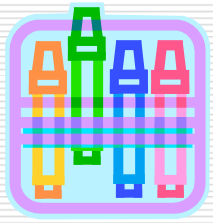
Micro Plate Accessory can be used as Auto sample for Solid samples measurement

Measurement using Micro Plate Accessory





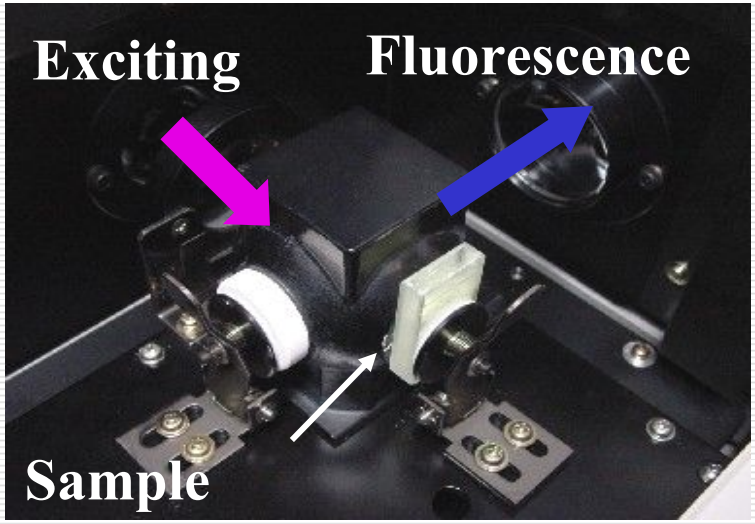
Beam Size: ϕ5mm



“FL” is written on the paper with Highlight marker pen and measured the distribution of Fluorescence.

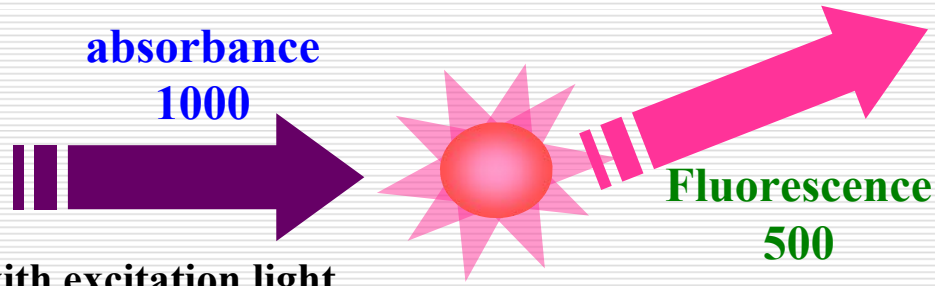
Measurement of Quantum Yield of Solid Samples

Accessories for Q.Y Measurement:
- Φ60mm Integrating sphere
- Spectrum correction kit
- Quantum Yield Calculation Software
  etc



Quantum yield is the rate of "Fluorescent amount" and "Absorbed amount"

What is the Quantum Yield ..



Quantum yield=0.50

$$\text{Quantum yield } \Phi = \frac{\text{Number of photons emitted by the sample (fluorescent amount)}}{\text{Number of photons absorbed by the sample (absorbed amount)}}$$

<Purpose of Measurement>

- Efficiency to convert the absorbed light to fluorescence, index of the fluorescent material
- The higher the quantum yield, the better the quality of the fluorescent material
- Development and evaluation of new fluorescent probes for bio-industry
- Development and evaluation of organic EL materials and fluorescent substances for lightening equipment

Introduction of F-7000 Accessories

Quantum Yield Units Accessory

Lighting, AV equipment, Film, Filter and FL material

Quantum Yield Units:

60 integrating sphere, White Plate, Spectralon TM standard white plate, Sample cell, Aluminum oxide powder, Computer Program, Manual

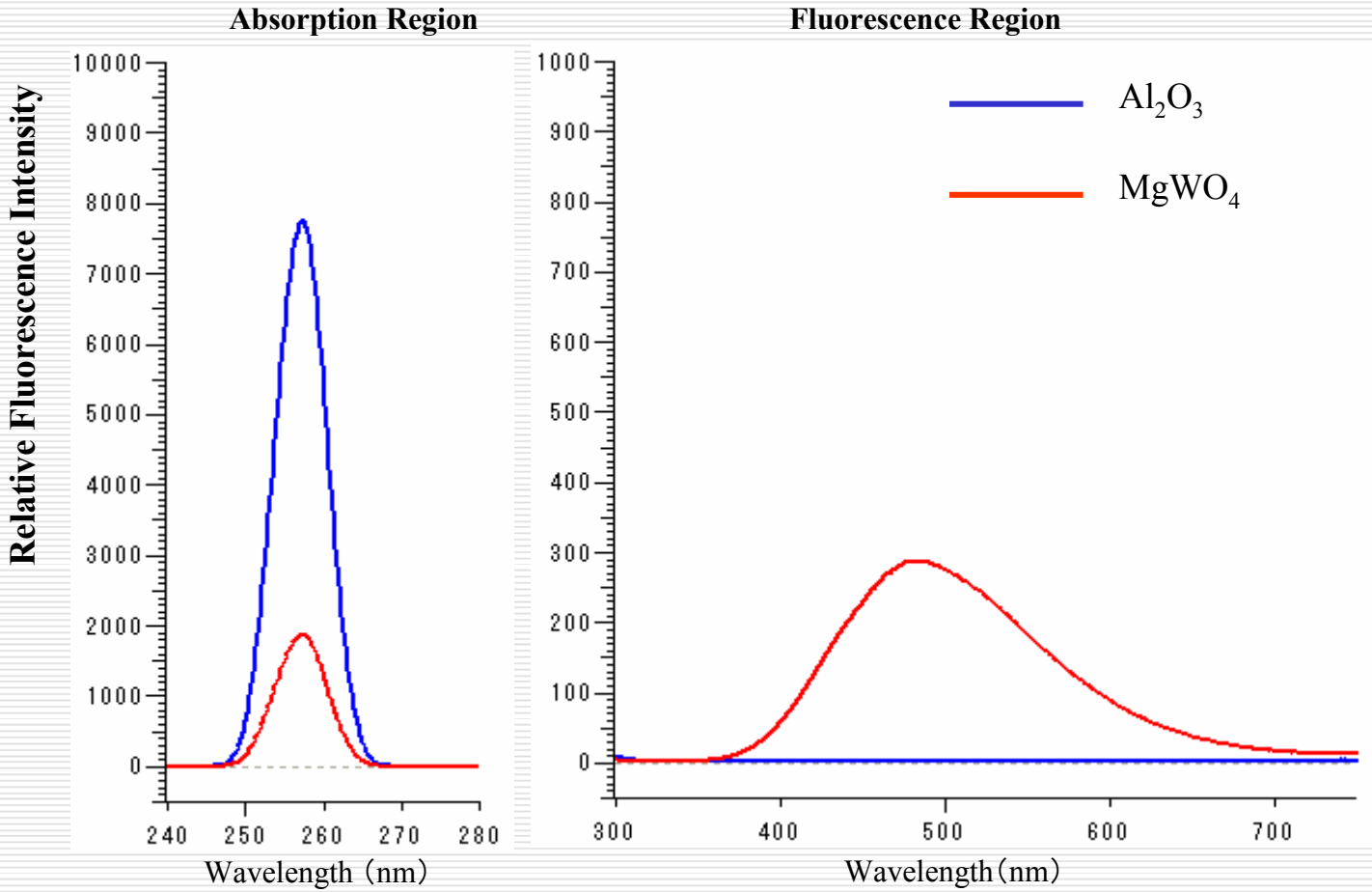
<Feature of F-7000 Quantum Yield System>

- High Sensitivity, Highly Accurate Measurement with 6 Orders Wide Dynamic Range
- High Throughput Measurement by High-Speed Scan
- Measurement Over a Wide Wavelength Range of 240 to 800nm*1
- Large Selection of Calculation Items, Easy Operation by Special Software

*1: Optional Detector necessary

Measurement of Fluorescent Substance for Lamp

Measurement of $MgWO_4$



Quantum Yield Measurement of $MgWO_4$ (Powder)

Quantum Yield Measurement Result

Quantum Yield	**: 0.80**
Reported Value 4)	**: 0.81**
⊿ϕ	**: 0.01**

Measurement Conditions

Excitation WL: 254nm
Measurement WL: 240-750nm

Calculation Condition

Scattered light range: 244-264nm
Fluorescence range: 350-750nm

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