Application Note
FP-0018

# System Evaluation of Spectrofluorometer FP-8500 with Optical Fiber

## Introduction

The OBF-832 optical fiber interface is used to connect an optical fiber for remote sampling of fluorescence materials with an FP-8000 Series fluorescence spectrophotometer. By using an optical fiber, measurement can be made by holding the probe close to the sample. Optical fibers can be used for a variety of measurements, such as when the sample is larger than the sample chamber, to follow an in-situ reaction, or for measurement in hazardous environments, such as high/low temperature and high pressure.

**FP-8500**
Spectrofluorometer

In this application note, a comparison was made by measuring samples using an FP-8500 fluorescence spectrophotometer with both a FLH-809 film holder and an optical fiber with the OBF-832 optical fiber interface. To check for spectral accuracy the fiber probe was corrected for quantum efficiency using a calibrated light source with a validated spectral emission.

## Keywords

Spectrofluorometer, Optical fiber, Fluorescence spectrum, fluorescence spectrophotometer

## Measurement System and Condition

| | |
|---|---|
| FP-8500 | Fluorescence spectrophotometer |
| OBF-832 | Optical fiber unit |
| Calibration | ESC-842 Calibration light source / standard white reference plate |
| Samples | Red and Yellow reference cards |

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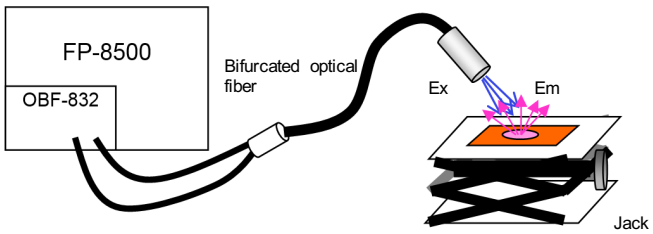
System Configuration




Measurement of the Calibrated Light Source under Dark Room Condition

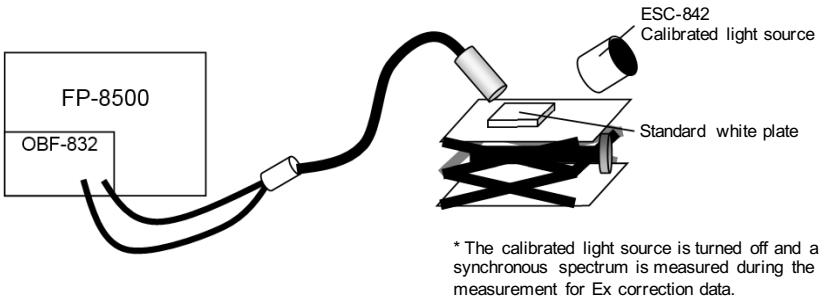



**Figure 1.** Measurement system

| Measurement Condition | |
|---|---|
| Measurement Mode | Fluorescence |
| Excitation Bandwidth | 10 nm |
| Emission Bandwidth | 10 nm |
| Excitation Wavelength | 310 nm |
| Measurement Range | 400 - 800 nm |
| Scan Speed | 100 nm/min |
| Data Interval | 0.5 nm |
| Response | 1 sec |
| PMT Voltage | 350 V (yellow card), 550 V (red card) |

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## Measurement Results

Figures 2 and 3 show the measurement results. The profiles of the spectra of each colored sample measured using both the optical fiber and FLH-809 film holder were consistent with each other.

These results demonstrate that the spectral accuracy obtained using both the fiber probe and film holder yield comparable data.

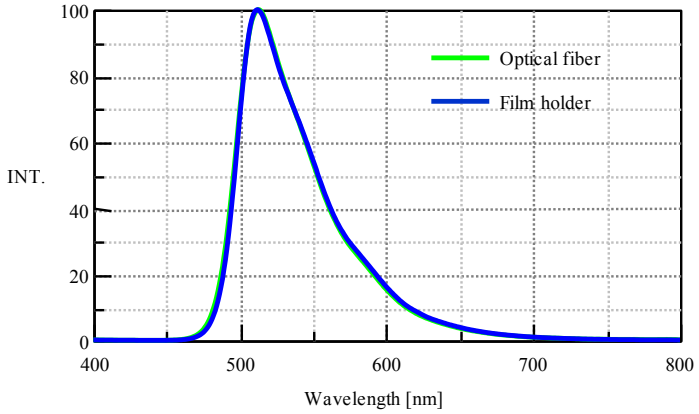


**Figure 2.** Normalized fluorescence spectra of the yellow card

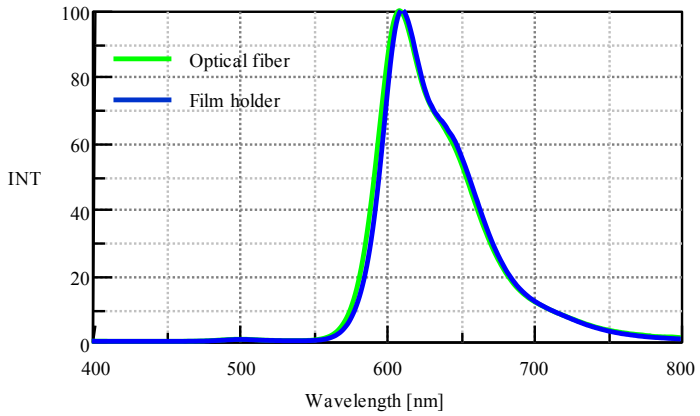


**Figure 3.** Normalized fluorescence spectra of the red card

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