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

JASCO INC.
28600 Mary's Court, Easton, MD 21601 USA
Tel: (800) 333-5272, Fax: (410) 822-7526
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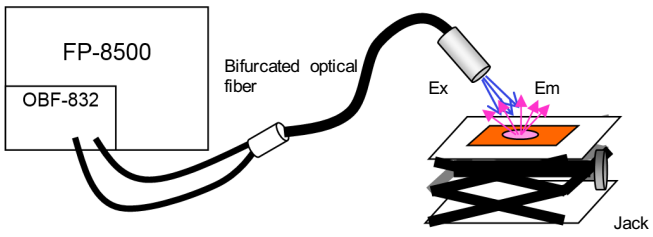
System Configuration



Measurement of the Calibrated Light Source under Dark Room Condition

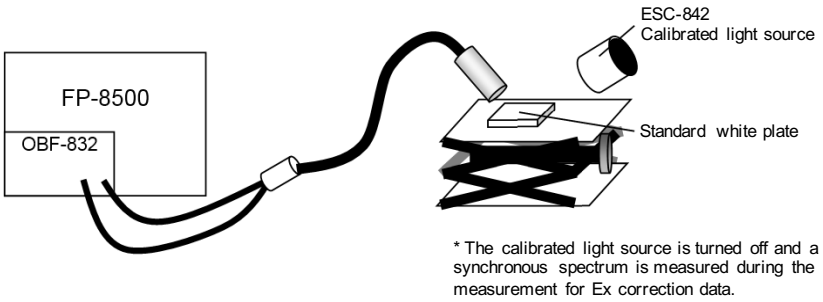


Figure 1. Measurement system

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.

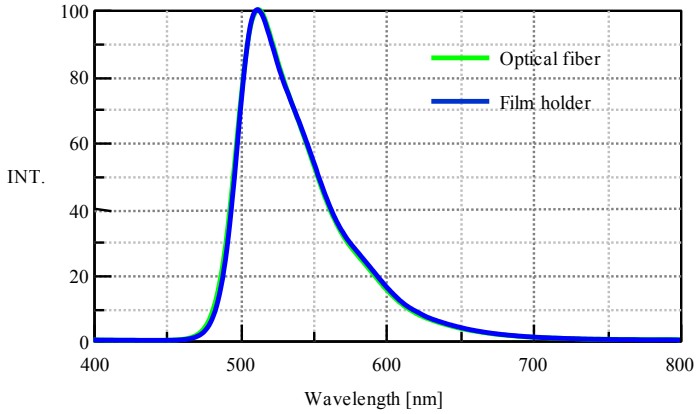

Figure 2. Normalized fluorescence spectra of the yellow card

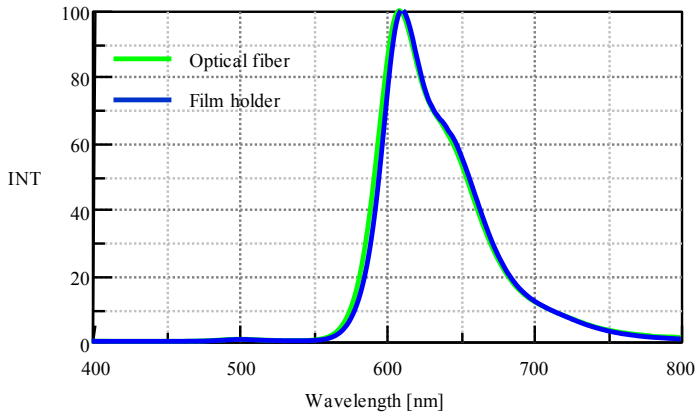

Figure 3. Normalized fluorescence spectra of the red card

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Tel: (800) 333-5272, Fax: (410) 822-7526
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