

System evaluation of spectrofluorometer FP-8500 with optical fiber

Introduction

By using OBF-832 optical fiber unit, it becomes easy to use an optical fiber as a fluorescence detection unit of the analyzer. With the use of the optical fiber, the measurement can be performed by just approaching a probe to a sample. It is possible to measure a sample which is larger than sample chamber, to trace in vivo reaction, to measure under the severe environment where people can not approach such as high/low temperature and high pressure.

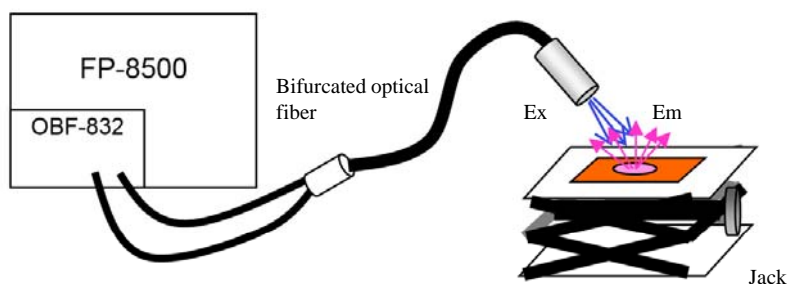
In this application note, part of fluorescent samples were measured by using FP-8500 spectrofluorometer and OBF-832 optical fiber unit.

Keyword: Spectrofluorometer, Optical fiber, Fluorescence spectrum

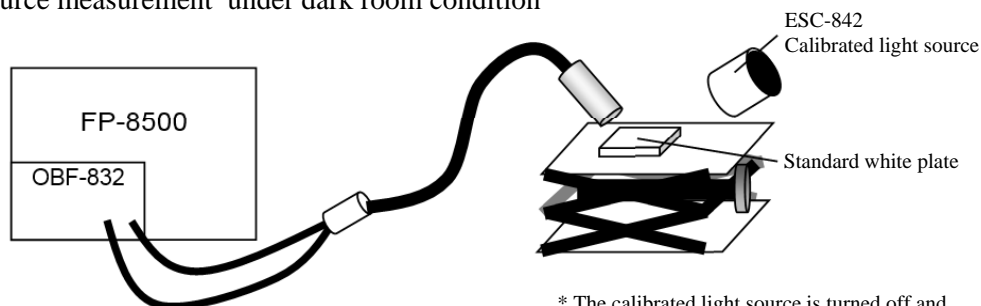
Measurement System and condition

| | |
|-------------|---|
| FP-8500 | Spectrofluorometer |
| OBF-832 | Optical fiber unit |
| Calibration | Calibration light source / standard white plate |
| Samples | Red and Yellow referee cards |

Sample measurement



Calibrated light source measurement under dark room condition



* The calibrated light source is turned off and synchronous spectrum is measured during the measurement of Ex correction data.

Fig. 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) |

Measurement Results

Figure 2 and 3 show the measurement results. The profiles of each spectra measured with the optical fiber and with FLH-809 film holding block were consistent with each other.

From the result, this system is effective in the case such as the measurement of a sample which is larger than sample chamber and the measurement under the severe environment.

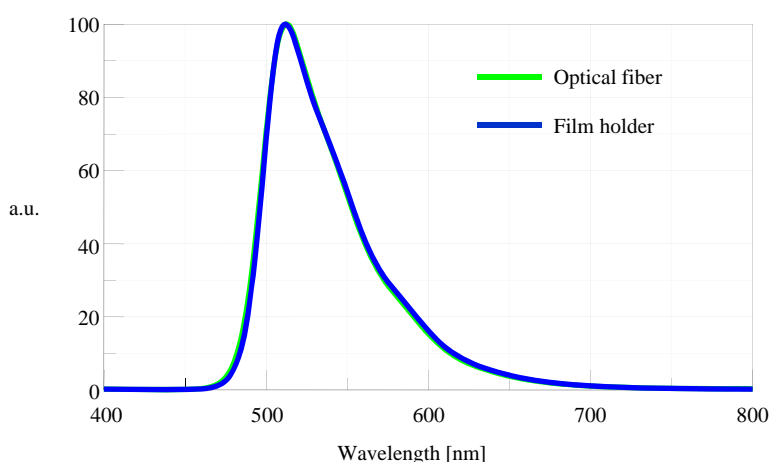


Fig. 2 Peak normalized fluorescence spectrum of the yellow card

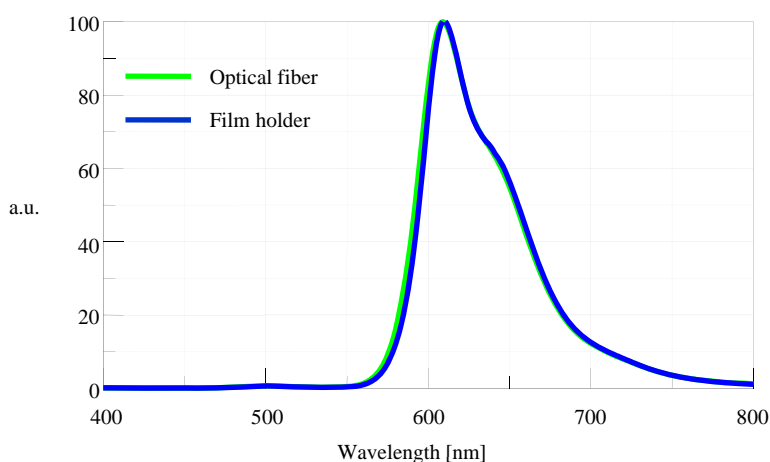


Fig. 3 Peak normalized fluorescence spectrum of the red card