

Transmittance Measurement of Solid Sample by Fluorescent Spectrophotometer

INTRODUCTION

For the transmittance measurement of a fluorescent solid sample, the transmitted light and fluorescence cannot be differentiated when measured by a general-purpose spectrophotometer. As fluorescence is detected in addition to the transmitted light, the transmittance higher than the actual one is obtained.

When analyzing a fluorescent sample, the analysis by a fluorescence spectrophotometer is effective. By using F-7000 fluorescence spectrophotometer with a transmission holder (custom made) in the integrating sphere accessory (quantum yield measurement unit), the transmission spectrum of a plate-like solid sample can be measured. With the synchronous spectrum mode which allows simultaneous scanning of the spectroscopy on the excitation side and that on the fluorescence side, the transmission spectrum without the effects of fluorescence can be measured.

SAMPLE

Sample : Fluorescence resin board



Under normal lighting

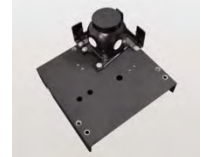
Under UV irradiation

ACCESSORY

Transmission holder (custom made)



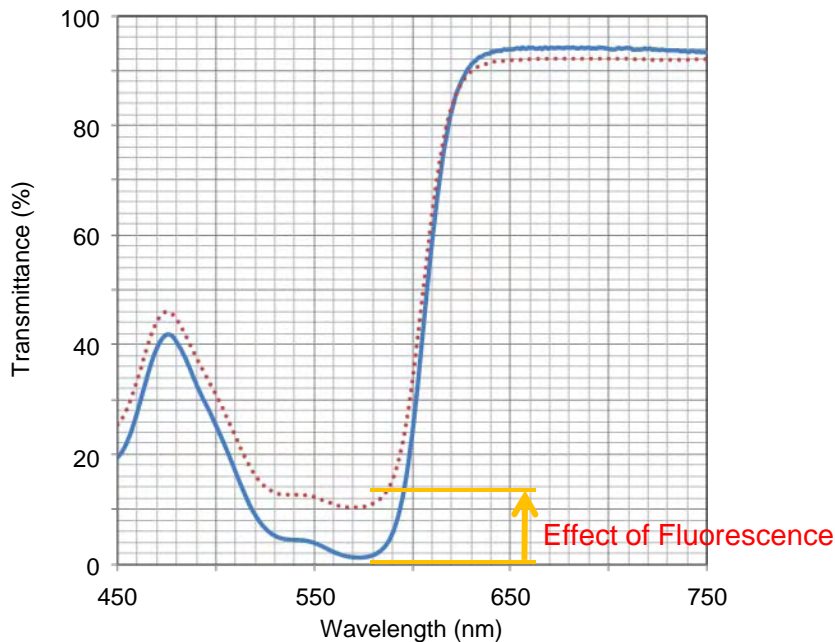
Quantum Yield Measurement Unit (P/N : 5J0-0148)



ANALYTICAL CONDITIONS (Fluorescence Spectrophotometer)

Instrument	: F-7000	Slit on excitation side	: 5 nm
Excitation wavelength	: 450 nm	Slit of fluorescence side	: 20 nm
Fluorescence start wavelength	: 450 nm	Response	: Automatic
Fluorescence end wavelength	: 700 nm	Detector	: R928F
Scan speed	: 240 nm/min	Photomultiplier Vol.	: 250 V

..... (a) Front Dispersion Type (spectrophotometer) — (b) Dual Dispersion Type (fluorescence spectrophotometer)



Transmission Spectrum of Fluorescence Resin Board

KEY WORDS

Material/Processing Material Related, Glass/Ceramic, Fluorescence Resin Board, Solar Cell, Display, Transmittance, Transmission Spectrum, UV-ray Cut, Sealing Film, Fluorescence Resin, FL, F-7000

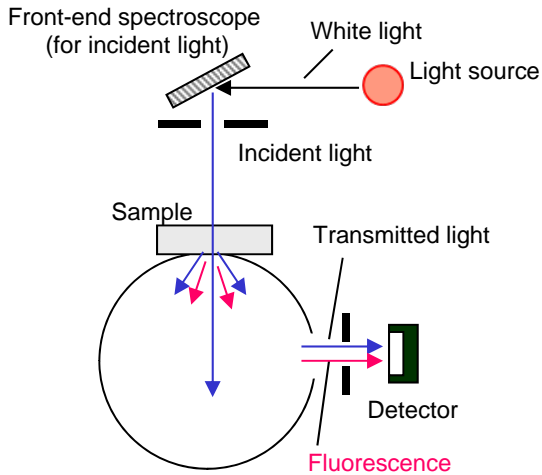
Fluorophotometer (FL)

Sheet No. FL120003-01

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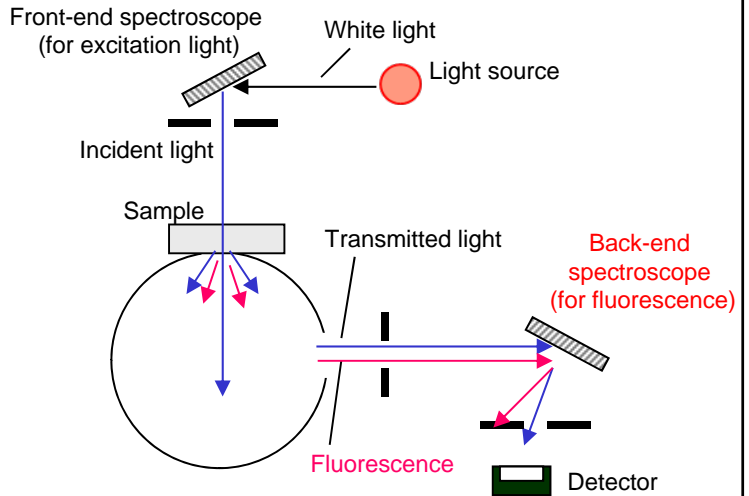
Measurement Model

(a) By Spectrophotometer (front dispersion)

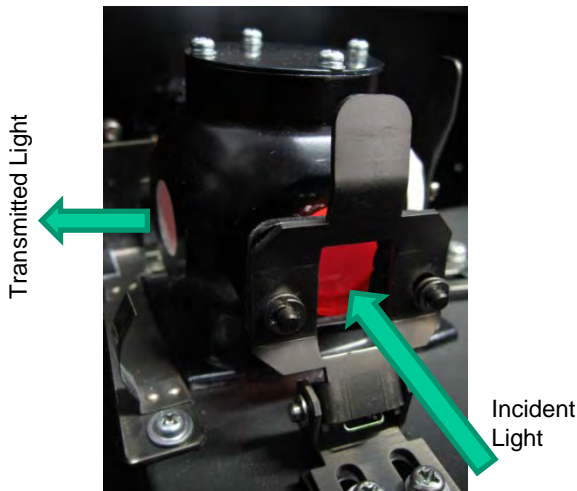


⇒ Transmitted light and fluorescence cannot be differentiated, and the transmittance is increased by the amount of the fluorescence.

(b) By Fluorescence Spectrophotometer (dual dispersion)



⇒ Transmitted light and fluorescence can be separated and thus, an accurate transmittance can be obtained.



Appearance of Sample Setting

An integrating sphere and a transmission holder are used for the sample setup.

The sample is set in the front-end of the integrating sphere. The transmitted light is averaged by the integrating sphere, dispersed by the back-end spectroscop and then, the light at the target wavelength (transmitted light) is directed.

- **Installed with synchronous spectrum mode**

⇒ By using the synchronous spectrum mode, the transmittance of a transparent sample can be measured without the effect by fluorescence.

- **Dynamic range of 6 or more orders of magnitude**

⇒ With the dynamic range of 6 or more orders of magnitude, even a very weak transmitted light can be detected.

- **Applicable to fluorescence measurement**

⇒ By using the fluorescence spectrum mode, the fluorescence properties of a sample can be obtained.

KEY WORDS

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Fluorophotometer (FL)

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