

Measurement of Paper (3D Fluorescence Spectra)

INTRODUCTION

The fluorescence characteristics of the fluorescent brightener contained in fine paper and recycled paper were analyzed. Paper consists of an organic compound which absorbs a blue light and it may appear yellowish due to its effect. Fluorescent brighteners are used in fine paper and recycled paper to enhance the whiteness. Fluorescent brighteners correct for the yellowness and maintain the whiteness of the paper by absorbing UV light and emitting blue fluorescence. This time, the fluorescence characteristics for two kinds of fine paper and one kind of recycled paper were analyzed. The fluorescence attributable to the fluorescent brightener was detected in one kind of the fine paper and of the recycled paper respectively. Based on the 3D fluorescence spectrum, it was found that the fluorescent brightener absorbs the UV light at about 365 nm and emits the fluorescence at about 435 nm. Fluorescent brighteners are not only used for paper but also for fibers, clothes, and resins.

SAMPLE

SAMPLE NAME : Paper 1 (fine paper)

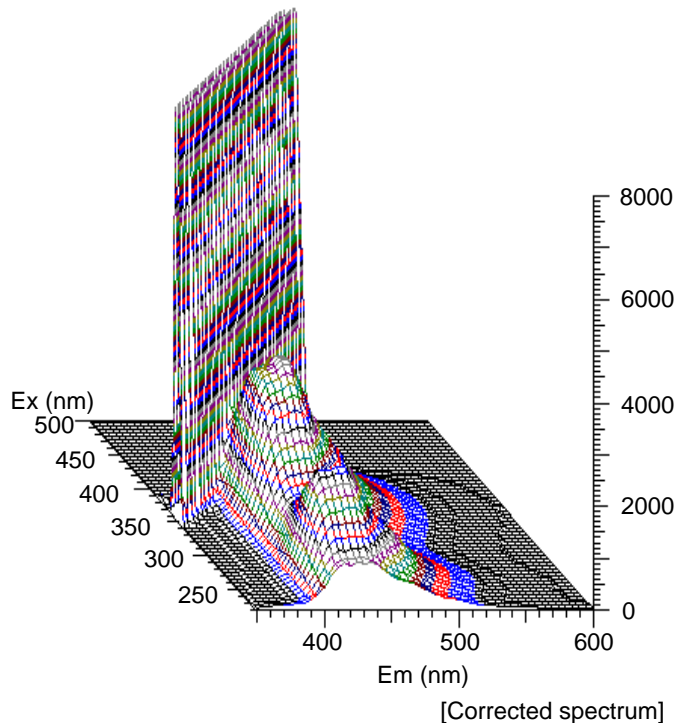
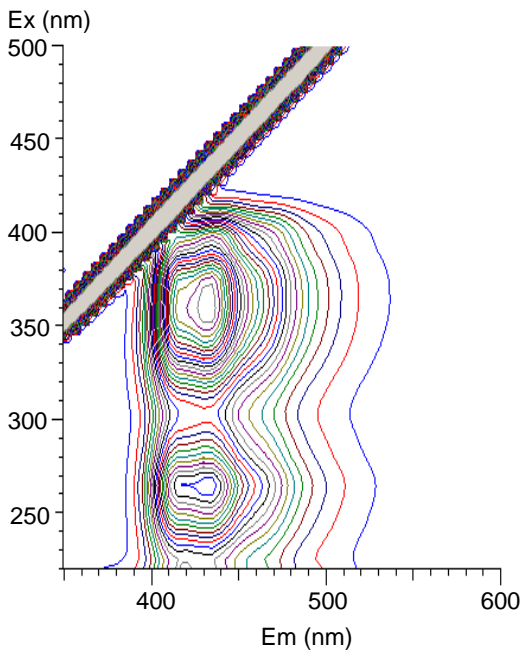
ACCESSORY

Solid sample holder
(P/N : 650-0161)



INSTRUMENT CONDITIONS

INSTRUMENT	: F-7000	RESPONSE	: Auto	FULLSCALE	: 8000
EX BANDPASS	: 5 nm	PHOTOMULTIPLIER	: R928F	DIVISION NUMBER	: 100
EM BANDPASS	: 5 nm	PHOTOMULTIPLIER VOL.	: 350 V		
SCAN SPEED	: 60000 nm/min				



KEY WORDS

Material-Processing Material Related, Paper·Pulp, Paper, Recycled Paper, Fluorescent Brightener, Fluorescent Dye, 3D Fluorescence Spectrum, 3D, FL, F-7000

Fluorophotometer (FL)

Sheet No. FL090020-01

Measurement of Paper (3D Fluorescence Spectra)

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SAMPLE

SAMPLE NAME : Paper 2 (fine paper)

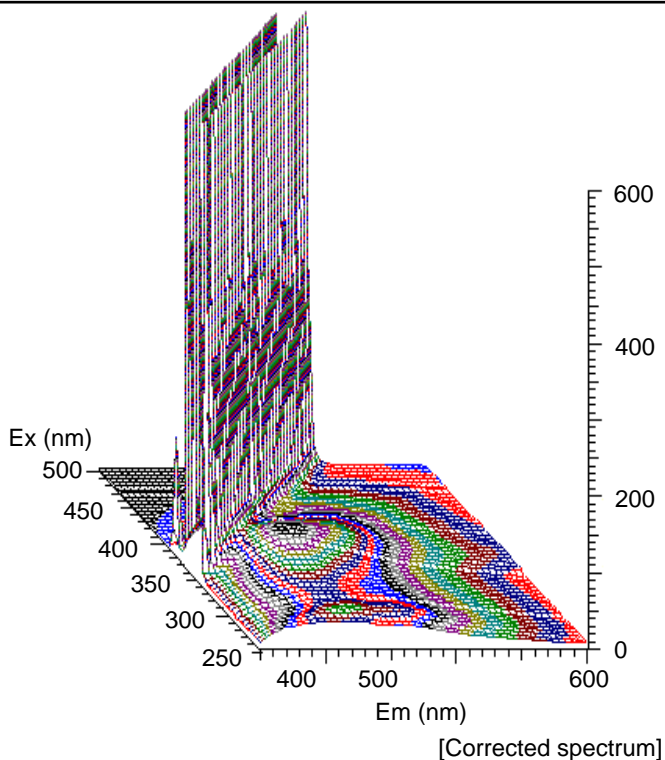
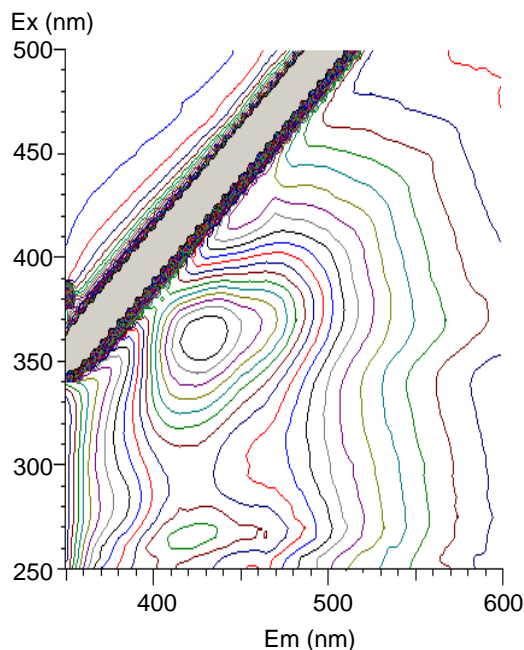
ACCESSORY

Solid sample holder
(P/N : 650-0161)



INSTRUMENT CONDITIONS

INSTRUMENT	: F-7000	RESPONSE	: Auto	FULLSCALE	: 600
EX BANDPASS	: 5 nm	PHOTOMULTIPLIER	: R928F	DIVISION NUMBER	: 2.5
EM BANDPASS	: 5 nm	PHOTOMULTIPLIER VOL.	: 350 V		
SCAN SPEED	: 60000 nm/min				



KEY WORDS

Material-Processing Material Related, Paper·Pulp, Paper, Recycled Paper, Fluorescent Brightener, Fluorescent Dye, 3D Fluorescence Spectrum, 3D, FL, F-7000

Fluorophotometer (FL)

Sheet No. FL090020-02

Measurement of Paper (3D Fluorescence Spectra)

INTRODUCTION

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SAMPLE

SAMPLE NAME : Paper 3 (recycled paper)

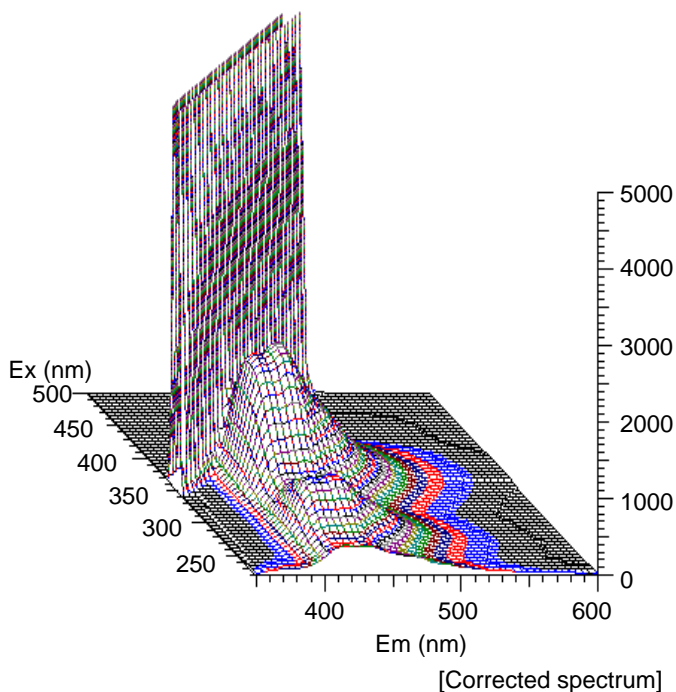
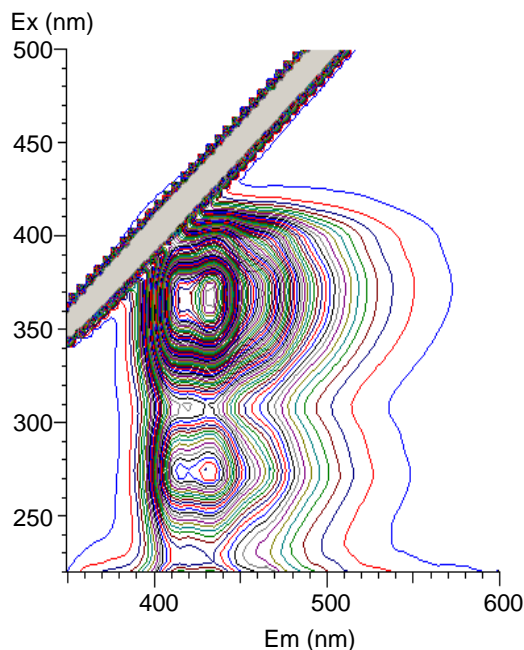
ACCESSORY

Solid sample holder
(P/N : 650-0161)



INSTRUMENT CONDITIONS

INSTRUMENT	: F-7000	RESPONSE	: Auto	FULLSCALE	: 5000
EX BANDPASS	: 5 nm	PHOTOMULTIPLIER	: R928F	DIVISION NUMBER	: 25
EM BANDPASS	: 5 nm	PHOTOMULTIPLIER VOL.	: 350 V		
SCAN SPEED	: 60000 nm/min				



KEY WORDS

Material-Processing Material Related, Paper-Pulp, Paper, Recycled Paper, Fluorescent Brightener, Fluorescent Dye, 3D Fluorescence Spectrum, 3D, FL, F-7000

Fluorophotometer (FL)

Sheet No. FL090020-03

Measurement of Paper (Fluorescence Spectrum)

INTRODUCTION

The fluorescence characteristics of the fluorescent brightener contained in fine paper and recycled paper were analyzed. Paper consists of an organic compound which absorbs a blue light and it may appear yellowish due to its effect. Fluorescent brighteners are used in fine paper and recycled paper to enhance the whiteness. Fluorescent brighteners correct for the yellowness and maintain the whiteness of the paper by absorbing UV light and emitting blue fluorescence. This time, the fluorescence characteristics for two kinds of fine paper and one kind of recycled paper were analyzed. The fluorescence attributable to the fluorescent brightener was detected in one kind of the fine paper and of the recycled paper respectively. Based on the 3D fluorescence spectrum, it was found that the fluorescent brightener absorbs the UV light at about 365 nm and emits the fluorescence at about 435 nm. Fluorescent brighteners are not only used for paper but also for fibers, clothes, and resins.

SAMPLE

SAMPLE NAME : Paper 1 (fine paper)
 Paper 2 (fine paper)
 Paper 3 (recycled paper)

ACCESSORY

Solid sample holder
 (P/N : 650-0161)

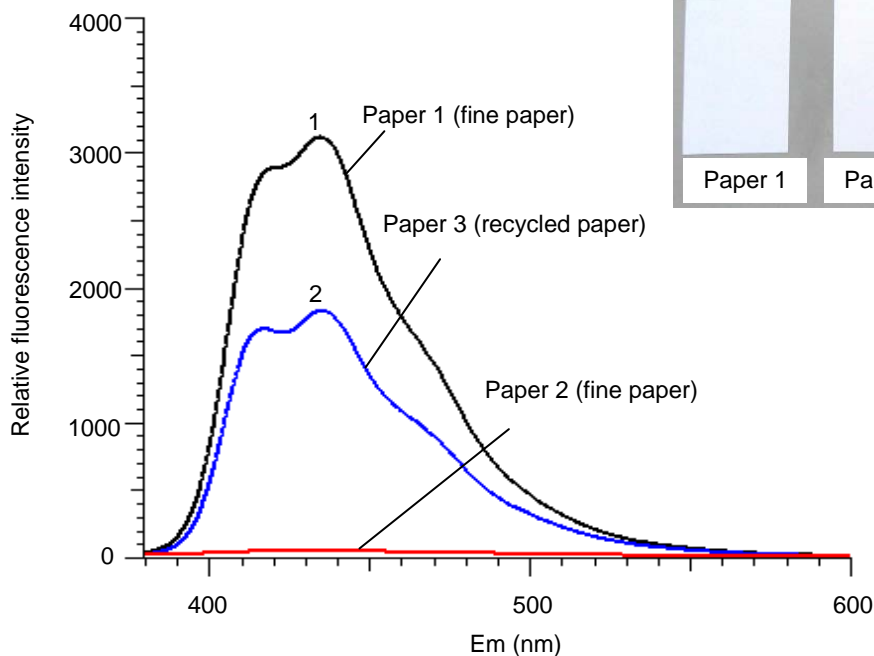


INSTRUMENT CONDITIONS

INSTRUMENT	: F-7000	RESPONSE	: Auto
EX WAVELENGTH	: 360 nm	PHOTOMULTIPLIER	: R928F
EX BANDPASS	: 5 nm	PHOTOMULTIPLIER VOL.	: 250 V
EM BANDPASS	: 5 nm		
SCAN SPEED	: 1200 nm/min		

PEAKS (nm)

1 : 434
 2 : 433



[Corrected spectrum]

KEY WORDS

Material-Processing Material Related, Paper-Pulp, Paper, Recycled Paper, Fluorescent Brightener, Fluorescent Dye, Fluorescence Spectrum, FL, F-7000

Fluorophotometer (FL)

Sheet No. FL090020-04