

High-Throughput Measurement by UH4150 Spectrophotometer

- Comparison Scan Speed with 600 nm/min and 1200 nm/min -

INTRODUCTION

UH4150 spectrophotometer, developed as the successor instrument of U-4100, inherited the prism-grating double monochromator optical system with an established reputation. In addition, the signal uptake method was improved to enable the high throughput measurement.

Until now, the measurement had to be performed at the scan speed of 600 nm/min for the analysis with the sampling interval of 1 nm.

By using UH4150 spectrophotometer, the analysis with the sampling interval of 1 nm is possible at the scan speed of 1200 nm/min, twice the conventional speed, and the data with almost the same accuracy level can be obtained.

This time, the transmission spectra (incident angle of 0°, 5 repeated measurements: including the setting) of a dielectric multilayer substrate were obtained and the comparison was made for scan speeds of 600 nm/min and 1200 nm/min.



UH4150

SAMPLE

Sample: Dielectric multilayer substrate

INSTRUMENT CONDITIONS

Instrument: UH4150 Spectrophotometer

Measurement wavelength range: 300 - 1200 nm

Sampling interval: 1 nm

[UV/VIS]

Scan speed: 600/1200 nm/min

Slit: 8 nm

[NIR]

Scan speed: 750/1200 nm/min

Slit: Automatic control

PbS sensitivity: 2

ACCESSORY

Φ60 Integrating sphere accessory
(P/N : 1J1-0121)

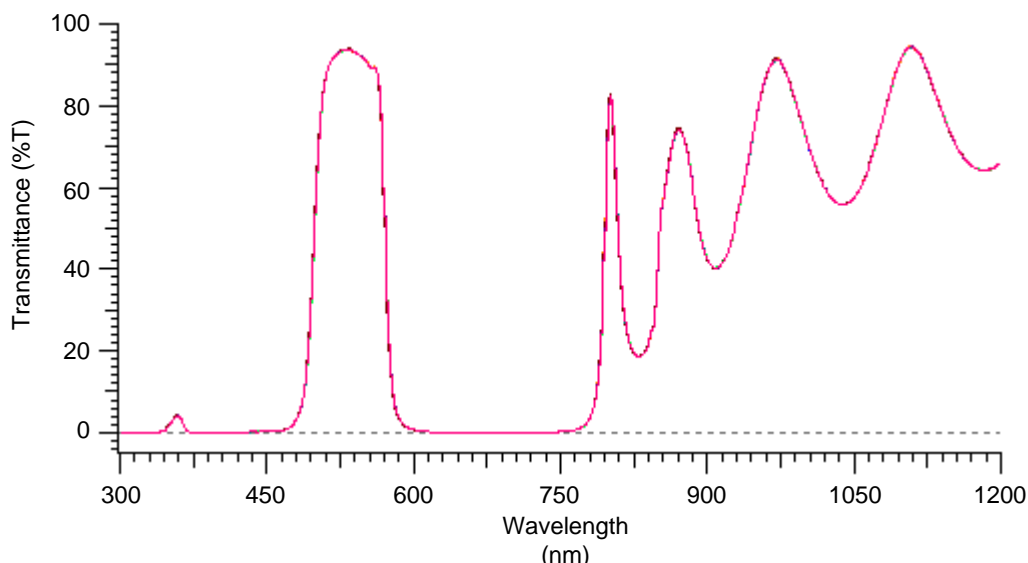


Figure 1 Result for Transmission Spectrum Measurement of Dielectric Multilayer Substrate by UH4150
(Overlay of 5 Measurements at Scan Speeds of 600 nm/min and 1200 nm/min)

KEY WORDS

Material/Processing Material Related, Glass/Ceramics, Industrial Chemistry, Dielectric Multilayer Substrate, Transmission Spectrum, Spectrophotometer, Reproducibility, Prism, UH4150

Spectrophotometer (UV)

Sheet No. UV130007-01

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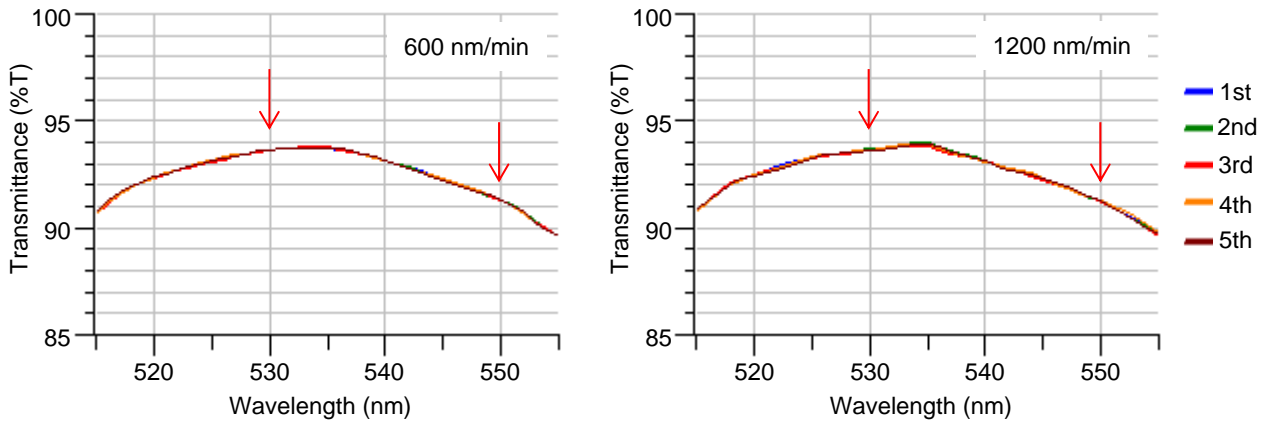


Figure 2 Enlarged Spectra for 515 nm - 555 nm

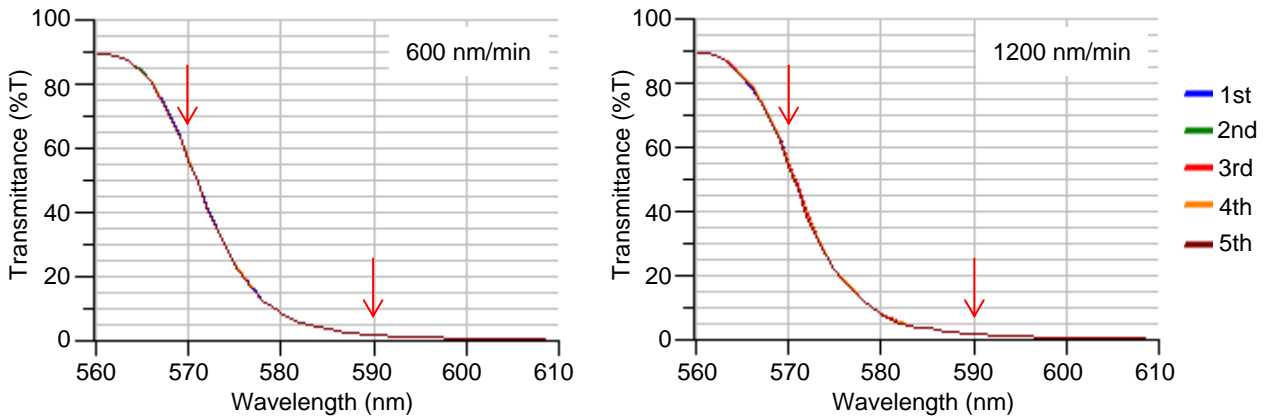


Figure 3 Enlarged Spectra for 560 nm - 610 nm

Table 1 Comparison of Measurement Reproducibility (Reproducibility for 5 Measurements: Including Setting)

Wavelength (nm)	Scan speed of 600 nm/min	Scan speed of 1200 nm/min
530	0.02 %	0.06 %
550	0.04 %	0.03 %
570	0.20 %	0.96 %
590	0.25 %	0.70 %

A dielectric multilayer substrate was measured by using UH4150 spectrophotometer at scan speeds of 600 nm/min and 1200 nm/min so as to compare the reproducibility. In Figure 2, the spectra at the wavelengths of 515 - 555 nm were compared. The measurement at the scan speed of 1200 nm/min could be performed with as good reproducibility as that at the scan speed of 600 nm/min.

Figure 3 shows the area where the transmittance rapidly changes. Even for the area that is difficult to measure, such as this one, the spectra with the scan speeds of 600 nm/min and 1200 nm/min were similar and thus, it is possible to shorten the analysis time.

KEY WORDS

Material/Processing Material Related, Glass/Ceramics, Industrial Chemistry, Dielectric Multilayer Substrate, Transmission Spectrum, Spectrophotometer, Reproducibility, Prism, UH4150

Spectrophotometer (UV)

Sheet No. UV130007-02