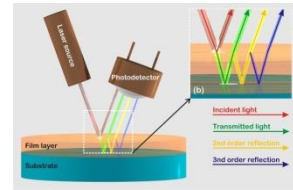


ThetaMetrisis APPLICATION NOTE #014

Thickness measurement of Cover slips



Goal: The measurement of the thickness of glass cover slips

Means & Methods: An FR-Basic-NIR-N configured to operate in the 550-950nm spectral range is used. The cover slips used in the present study were acquired from Corning (No. 1, thickness 0.13 to 0.16 mm) and Fischer Scientific (type 2 22mm x 22mm 0.19mm to 0.23mm thick)¹. The thickness of the cover slips was measured with a Mitutoyo mechanical thickness measurement (Model Laser Hologage with resolution of 0.1µm).

Results: The cover slips were mounted on a special holder suitable for the subtraction of the back-side reflectance in the total specular reflectance spectrum. The refractive index value for the cover slips was selected from the Materials database. FR-Basic NIR-N operate in a narrow spectral window and allows for the measurement of thick and ultra-thick films. In fig. 1 the experimental and fitted reflectance spectra are illustrated showing a very good agreement. The measured thickness values fall into the specifications provided by the manufacturer.

The same cover slips were characterized by the Mitutoyo thickness measurement system and the results are listed in table 1 also. The agreement between the thickness values measured with these two independent methodologies is excellent.

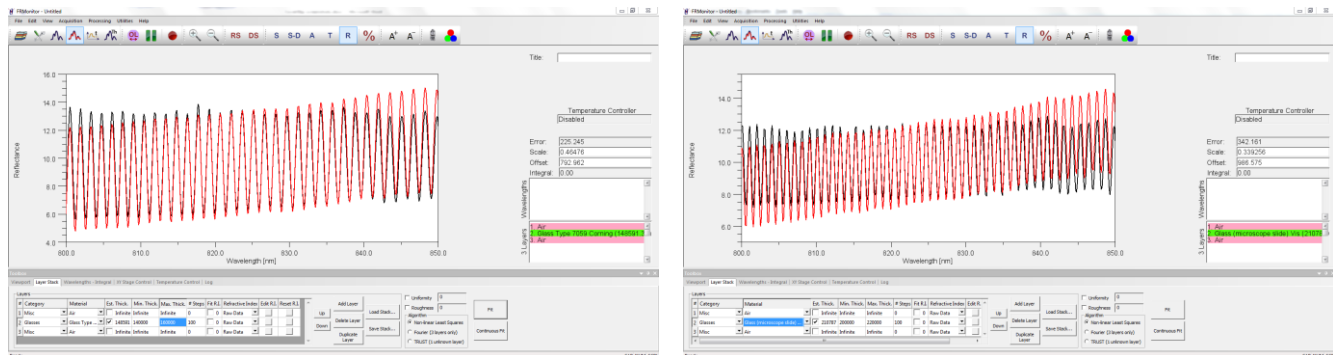


Figure 1: Measurements with FR-Basic NIR-N. The black curve is the experimental reflectance spectrum and the red curve is the fitted one after Fourier Transform. The spectral range used for the fitting is 800-850nm.

	FR-Basic NIR-N	Mitutoyo
Corning No. 1	148.6µm	148.7µm
Fischer Type-2	210.8µm	210.3µm

Conclusions: The thickness of cover slips was measured accurately with FR-Basic tools and the results were confirmed with independent measurements.

¹ <http://www.fisher.co.uk/1/1/72304-cover-slip-best-type-2-22mm-x-22mm-0-19mm-0-23mm-thick.html>