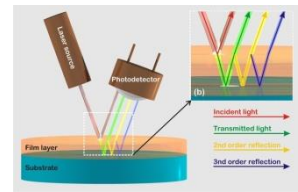


## ThetaMetrisis APPLICATION NOTE #023

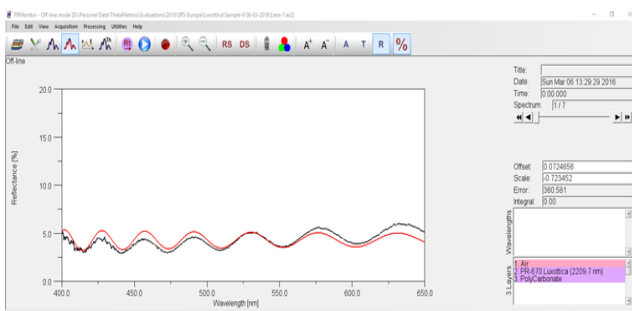
### Characterization of coatings on eyeglasses by FR-pOrtable



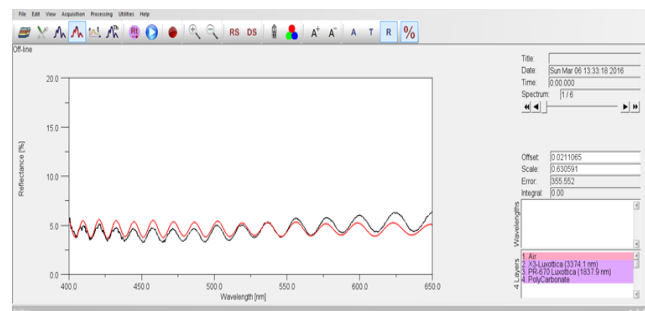
**Introduction:** Coatings on eye glasses are critical for good vision and long lasting usage of the eyeglasses. Each coating adds an additional layer of protection to lenses that improves the overall quality of the final product. Given the large volume processing, the manufacturers should have full control of the properties of those coatings (optical properties, thickness etc.). In this application note, thickness measurements of primer and primer/lacquer coatings on PC and PA based lenses by using FR-pOrtable tool is presented.

**Means & Methods:** Samples for characterization were PC and PA based lenses from a major manufacturer, coated either with primer or with primer and lacquer coatings. All samples were characterized by an FR-pOrtable tool operating in the 360-1050 nm spectral range and equipped with the focusing module (FR-Focusing). At this configuration, the spot size is ~200microns in diameter. Due to the curvature of the samples, a dedicated holder was designed and manufactured that allows for the easy and secure handling of the lens and measurement of thickness of the coating at almost every point on the lens.

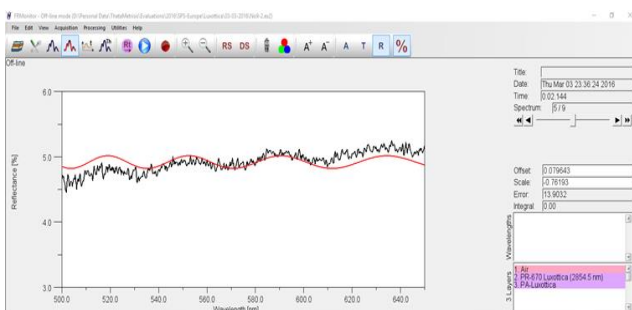
**Results:** For the samples with primer only, the thickness of this coating (PR-670 or PR-1165) is measured. For the samples with primer and lacquer the thicknesses of the individual layers are measured simultaneously. In the images bellow measurements for thickness for PC and PA based lens with primer only and with primer and lacquer, are illustrated.



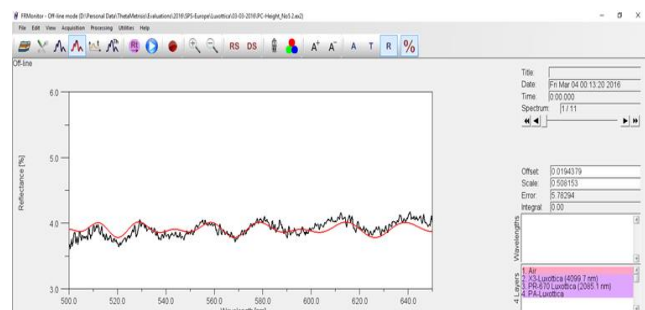
**Figure 1:** Experimental and fitted reflectance spectra from FR-Monitor of the PC based lens with PR-670. Thickness measured at 2.21um.



**Figure 2:** Experimental and fitted reflectance spectra from FR-Monitor of the PC based lens with PR-670 and X3. Thickness measured at 3.37µm.



**Figure 3:** Experimental and fitted reflectance spectra from FR-Monitor of the PA based lens with PR-670. Thickness measured at 2.85um.



**Figure 4:** Experimental and fitted reflectance spectra from FR-Monitor of the PA based lens with PR-670 and X3. Thickness measured at 4.10µm.