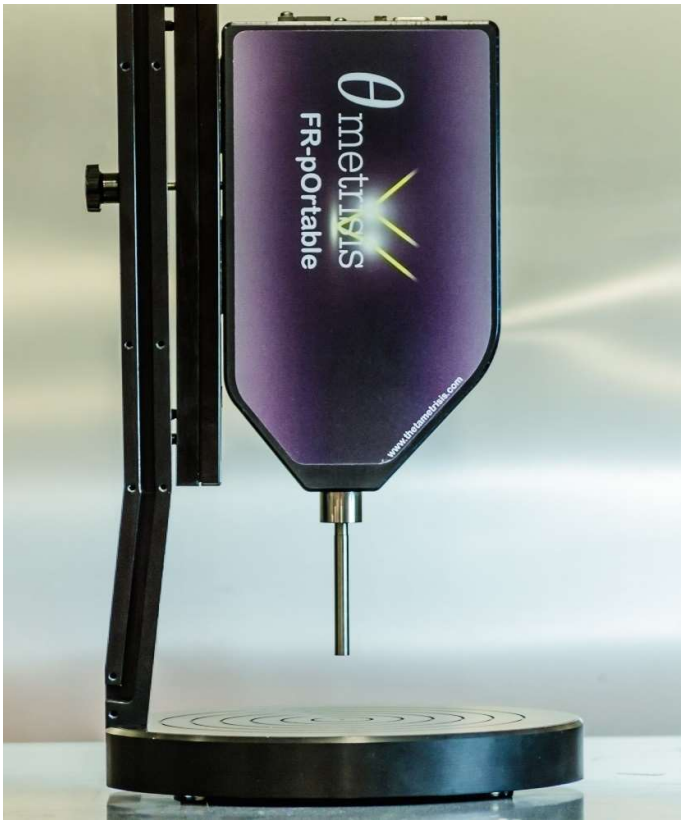
FR-pOrtable: USB-powered, film characterization tool at the Point-of-Need

FR-pOrtable is a unique handy solution for accurate & precise non-destructive characterization of transparent and semi-transparent single films or stack of films. It is powered through the same USB port used for data transfer and can be easily used at the field (the tool comes over the sample). With **FR-pOrtable** the user can perform reflectance and transmittance measurements in the 380-1050nm spectral range.

Applications

- **Univ. & Research labs**
- **Semiconductors** (Oxides, Nitrides, Si, Resists, etc.)
- **MEMS devices** (Photoresists, Si membranes, etc.)
- **LED**
- **Data Storage**
- **Hard/Soft coatings on curved substrates**
- **Polymer coatings,** adhesives, etc.
- **Biomedical** (parylene, balloon wall thickness, etc.)
- **And more**… (Contact us with your requirements)



The compact size of **FR-pOrtable** along with the custom designed reflection probe, and the long lifetime (20.000h) broad-band light source guarantee highly accurate and repeatable measurements.

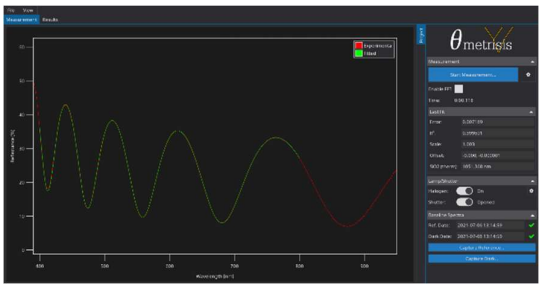
FR-pOrtable, can be either mounted on the supplied base/stage or can be easily transformed to a handheld thickness measurement tool to be placed over the sample under characterization.

FR-pOrtable is the robust & accurate thickness gauge for real-time characterization of coatings in industrial environment (e.g. R2R, belt conveyor…).

FR-pOrtable is the only USB-powered optical characterization tool for in-field applications.

Features

- Single-click analysis (no need for initial guess)
- Dynamic measurements
- Measurement of n & k, color
- Save images & videos for presentations
- 700+ non-identical materials
- Multiple installations for off-line analysis
- Free of-charge Software update



Specifications*

Thickness range	12nm – 90μm
Refractive Index calculation	✓ (100nm min. thickness)
Thickness Accuracy[1]	0.2% or 1nm
Thickness Precision[2,3]	0.02nm
Thickness stability[4]	0.05nm
Sample size	1mm to 180mm and up
Spectral Range	380nm – 1050nm
Working distance	3mm-20mm
Spot size	360um (diameter)
Light Source	Hybrid (LEDs and incandescence lamp) 20000h
Wavelength resolution	0.8nm
Number of Layers Measured	Max. 5 layers
Measurement time	10ms
A/D converter	16 bit
Power	USB – supplied
Dimensions	300mm x 110mm x 40mm[5]

Accessories

At-the-Field adaptor: For measurements at the Point-of-Need.

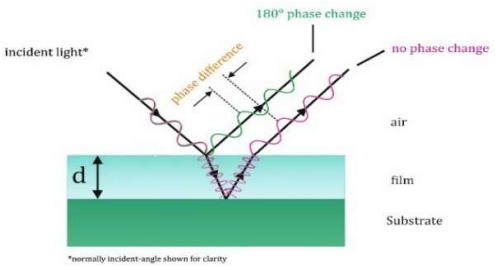
Transmittance module: For the measurement of transmittance & absorbance spectra of coatings, coating thickness etc.

Manual X-Y stage: For the characterization of coatings at multiple positions (manual movement)

Principle of Operation

White Light Reflectance Spectroscopy (WLRS) measures the amount of light reflected from a film or a multilayer stack over a spectral range, with the incident light normal (perpendicular) to the sample surface.

The measured reflectance spectrum, produced by interference from the individual interfaces is being used to determine the thickness, optical constants (n & k), etc. of free-standing and supported (on transparent or partially/fully reflective substrates) stack of films.



*Specifications are subject to change without any notice, [1]Measurements compared with a calibrated spectroscopic ellipsometer and XRD, [2]Average of standard deviation of mean value over 15 days. Sample: 1micron SiO_2 on Si wafer, [3]Standard deviation of 100 thickness measurements. Sample: 1micron SiO_2 on Si wafer, [4]2*Standard-Deviation of daily average over 15 days. Sample: 1micron SiO_2 on Si wafer, [5]Without the stage