θ metrisis Film Metrology & More

FR-pOrtable: Accurate & Cost Affordable Film Characterization

Introduction

FR-pOrtable is a unique turn-key solution for accurate & precise optical characterization of transparent and semi-transparent single films or stack of films. With FR-pOrtable the user can perform reflectance measurements for films in the 350-1000nm spectral range.

Ged rid-off power cables and large lab space requirements. Thanks to its unique design, FR-pOrtable draw power from the USB cable that is used for its control from the computer.

Analytical features

FR-pOrtable is built around a miniature 3648 pixel 16 bit resolution spectrometer and a high stability hybrid light source that combine incandescent lamp and LEDs. The average light source's life time is 20000h, and all its features, such as optical power, emission spectrum, stability etc., are controlled through the embedded μcontroller.

The compact design of FR-pOrtable and the custom designed reflection probe, guarantee high accuracy and repeatability of the performed measurements.

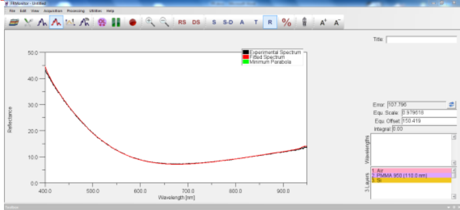
FR-pOrtable, can be either mounted on the supplied stage or can be easily transformed to a handheld thickness measurement tool to be placed over the sample under characterization. This way, FR-pOrtable is the optical characterization tool for in the field applications.

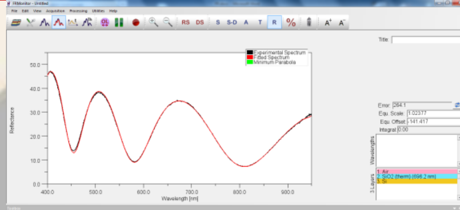
FR-pOrtable unique features

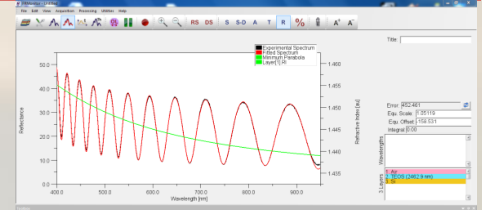
- Powered through USB, no-power cable is required
- Really portable, the probe comes over the sample
- Thanks to the soft plastic head, it is suitable for in field apps
- Its small footprint brings film characterization in the office
- The lowest price in the market

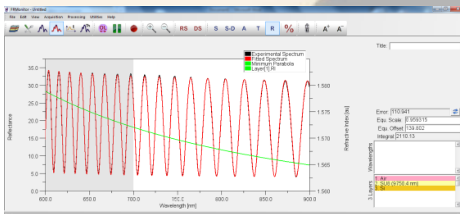
jsits@jsits.com tel :031-479-4211/2

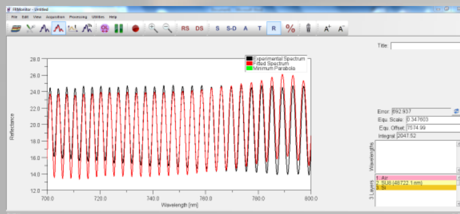
Typical Measurements with FR-pOrtable

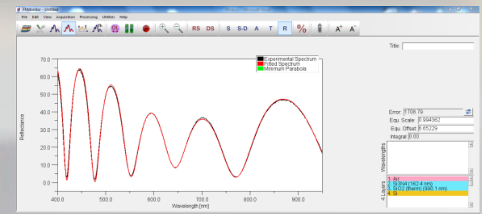

110nm PMMA layer on Si wafer


696.2nm Thermal SiO_2 layer on Si wafer


2462.9 TEOS on Si wafer (RI calc)

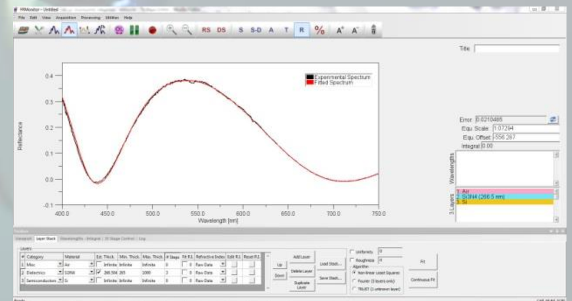

9.75μm SU-8 on Si wafer (RI calc)


48.7μm SU-8 resist film on Si wafer


Sample: Si_3N_4/SiO_2 on Si wafer
Results: 162.4nm / 990.1nm

Software

FR-pOrtable is controlled by **FR-Monitor®** the same software that is used for all FR-tools. FR-Monitor offers unique capabilities for a wide range of applications and versatility. It acquires in real time **Absorbance, Transmittance, Reflectance** spectra, and performs very fast computations thanks to the state of the art algorithms implemented in Visual C++.



Furthermore FR-Monitor includes the **White Light Reflectance Spectroscopy (WLRS)** algorithm (ThetaMetrisis™) for accurate calculation of **film thickness & optical constants (n & k) of free-standing and supported (over transparent or partially/fully reflective substrates) stack of (<10 layers) films.**

The entire system (hardware – software) is shipped ready for measurements. It can be easily used by anyone with basic computer skills without any deep knowledge of optics. The only additional part needed is a computer with one free USB ports running Windows XP/Vista/7/8 32 or 64bit.

FR-pOrtable Specifications*

Thickness measurement range*	25nm - 90μm
Refractive Index calculation	✓
Thickness measurement Accuracy	1nm
Thickness measurement Precision	0.1nm or 1‰
Spectral Range	350nm - 1000nm
Wavelength resolution	0.6nm
A/D converter	16 bit
Power	USB - supplied
Dimensions	300mm x 110mm x 40mm**
Weight	600gr**

Applications

- Polymer & Resist characterization
- Chemical measurements
- Dielectric characterizations
- Semiconductors
- Hardcoats
- Optical Coating
- non-metal Films

*Specifications are subject to change without any notice
**Without the stage.

For further information please contact us
jsits@jsits.com tel :031-479-4211/2