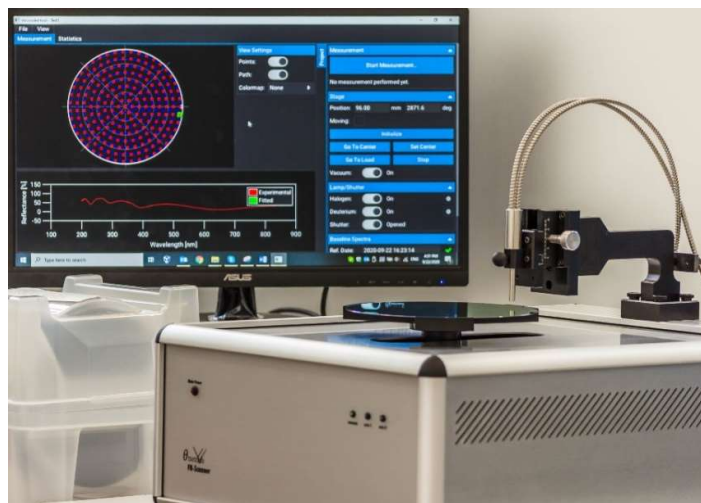


FR-Scanner: Automated, Ultra-fast & Accurate wafer mapping

FR-Scanner is a compact bench-top tool for the automatic characterization of films and coatings on wafers, masks or other substrates.

FR-Scanner is the ideal tool for the fast and accurate mapping of film properties: thickness, refractive index, uniformity, color etc.

Wafers of any diameter (300mm max) and shape can be accommodated on the vacuum chuck.



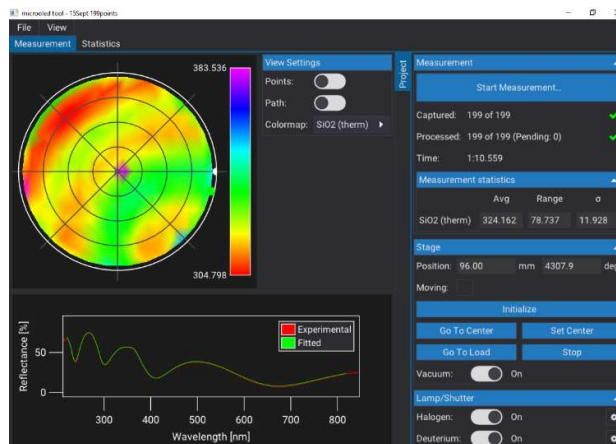
FR-Scanner scans the wafers by rotating the wafer and by moving it linearly (Polar Coordinates) with unparalleled speed and accuracy in both radius and angle. This way, accurate reflectance data with high repeatability are recorded, making FR-Scanner the ideal tool for at-line and on-line characterization of coatings on wafers or other substrates at processing facilities.

It is offered in a wide range of configurations for the characterization of films as thin as few nanometers and as thick as several hundreds of micrometers and is accompanied with a dedicated S/W for daily routine use.

FR-Scanner provides excellent performance in terms of accuracy, precision, reproducibility and long-term stability.

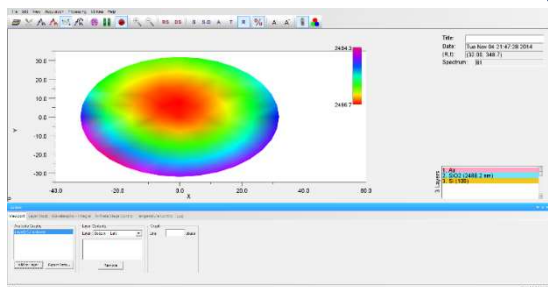
Applications

- **Semiconductor Manufacturing**
(photoresists, dielectrics, poly-Si, a-Si, DLC, photonic multilayer structures)
- **PV Industry**
- **Univ. & Research labs**
- **Liquid Crystal Display**
- **Optical Coatings**
- **Polymers**
- **MEMS and MOEMS**
- **Substrates: transparent**
(glass, quartz, etc.) **and semi-transparent**



Features

- Single-click analysis (no need for initial guess)
- Dynamic measurements
- Measurement of n & k, color is included
- Save videos for presentations
- Multiple installations for off-line analysis
- Free of-charge Software update



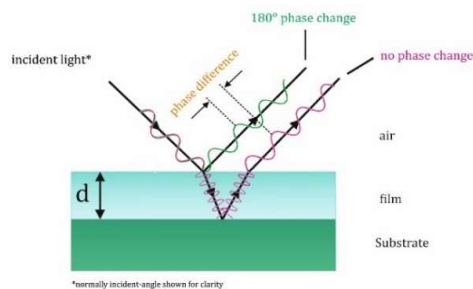
Specifications

Model	UV/Vis	UV/NIR -EXT	UV/NIR-HR	D UV/NIR	VIS/NIR	D Vis/NIR	NIR	NIR-980	NIR-1310
Spectral Range (nm)	200 – 850	200 –1020	200-1100	200 – 1700	370 –1020	370 – 1700	900 – 1700	900 - 1050	1280-1350
Pixels	3648	3648	3648	3648 & 512	3648	3648 & 512	512	3648	512
Thickness range ¹	3nm – 80um	3nm – 90um	3nm – 120um	1nm– 250um	15nm – 100um	15nm – 250um	50nm – 250um	300nm– 1.2mm	12um–2mm
Min. Thickness for n & k	50nm	50nm	50nm	50nm	100nm	100nm	500nm	-	-
Thickness Accuracy ²	1nm or 0.2%	1nm or 0.2%	1nm or 0.2%	1nm or 0.2%	1nm or 0.2%	2nm or 0.2%	3nm or 0.4%	50nm or 0.2%	50nm / 0.2%
Thickness Precision^{3,4}	0.02nm	0.02nm	0.02nm	0.02nm	0.02nm	0.02nm	0.1nm	5nm	5nm
Thickness stability⁵	0.05nm	0.05nm	0.05nm	0.05nm	0.05nm	0.05nm	0.15nm	5nm	5nm
Light Source	Balanced Deuterium & Halogen				Halogen			SLED	
Light Source MTBF	2000h				10000h			200000h	
Material Database	> 650 different materials								
Sample Size	Wafers: 2in-3in-4in-6in-8in-300mm ¹								
Resolution in R/Angle	5 μ m/0.1°								
Scanning Speed⁶	300meas/min (8" wafer size)								
Dimensions (mm)	600W x 750L x 500H & 450W x 320L x 250H								
Power Requirements	110V/230V, 50-60Hz, 300W								

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.



¹ Specifications are subject to change without any notice, ² Measurements compared with a calibrated spectroscopic ellipsometer and XRD, ³ Average of standard deviation of mean value over 15 days. Sample: 1micron SiO₂ on Si wafer, ⁴ Standard deviation of 100 thickness measurements. Sample: 1micron SiO₂ on Si wafer, ⁵ 2*Standard-Deviation of daily average over 15 days. Sample: 1micron SiO₂ on Si wafer. ⁶The chuck can accommodate samples of arbitrary shape. Stage 450mm wafers is also available on request. True X-Y scanning is also possible through custom-made configuration.