

POLOS[®] FR-ULTRA

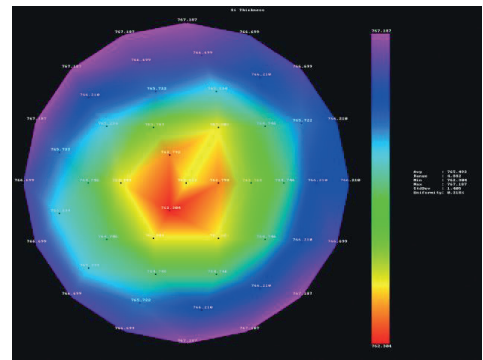
FR-Ultra is a unit for the fast, accurate and non-destructive measurement of thick and ultra-thick semiconductor and transparent layers.



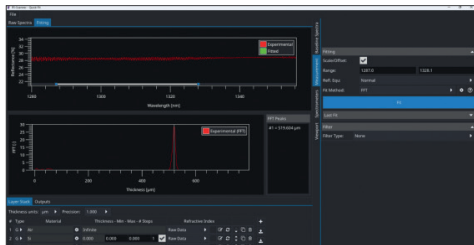
FR-Ultra is a dedicated tool for the accurate measurement of thick and ultra-thick layers from semiconducting and/or dielectric materials. Thanks to its advanced optics, FR-Ultra can measure either smooth or rough films & substrates of very high thickness.

Typical applications include:

- Thickness measurement of thick glasses (up to 2 mm in thickness either clear or haze)
- Thickness measurement of wafers (e.g. Single or Double Side Polished wafers up to 12 inch in diameter)
- FR-Ultra can be easily integrated with Cartesian and Polar stages for thickness mapping over large areas



Wafer thickness map (12-inch Si wafer)



FEATURES

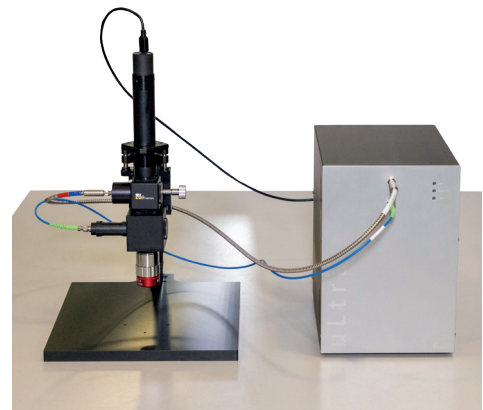
- Single-click analysis (no need for initial guess)
- Dynamic measurements
- 800+ materials
- Multiple installations for offline analysis
- Free of-charge software update

APPLICATIONS

- Universities & research labs
- Semiconductors
- Polymer & resist characterization
- Dielectric characterizations
- Hardcoat, anodization, and many more...

Contact us with your requirements!

ACCESSORIES	
Camera	Optical module for visualization of the area under characterization and measurement spot
Stage	XY-A200 (200 mm travel) or RΘ-150 (300 mm diameter) stage for wafer mapping



FILM CHARACTERIZATION

MODEL	NIR-N3			VIS/NIR		
Spectral range (nm)	1280 - 1350			380 - 1000		
Pixels	512			2048		
Thickness accuracy ***	0.4%			0.2%		
API support	-			-		
Light source	SLED (internal), > 150.000 h (MTBF)			Tungsten, 2000 h (MTBF)		
Integration time	5 msec (min)			5 msec (min)		
Objective lens	5X	10X	20X	5X	10X	20X
Thickness range (n = 1.5)	10 µm – 2 mm	10 µm – 2 mm	10 µm – 1.9 mm	10 µm – 2 mm	10 µm – 2 mm	10 µm – 1.9 mm
Si thickness range (n = 3.5)	7 µm – 1 mm	7 µm – 1 mm	7 µm – 0.9 mm	7 µm – 1 mm	7 µm – 1 mm	7 µm – 0.9 mm
Spot size	40 µm	18 µm	12 µm	40 µm	18 µm	12 µm
Nominal WD	45 mm	34 mm	31 mm	45 mm	34 mm	31 mm
WD Tolerance @ 100 µm	16 mm	4 mm	1.2 mm	16 mm	4 mm	1.2 mm
WD Tolerance @ 500 µm	4 mm	1.2 mm	0.8 mm	4 mm	1.2 mm	0.8 mm
Material database	> 800 different materials					
Dimensions (cm) / weight (kg)	39 x 32 x 22 cm (LxWxH), 13 kg (stage excluded)					
Power requirements	110V / 230V, 50 - 60 Hz, 50W			110V / 230V, 50 - 60 Hz, 30W		
SW characteristics	FR-Monitor v4.0 (free of charge updates)					

* Specifications are subject to change without any notice;

** Measurement on 100µm DSP Si wafer. Values correspond to the criterion of keeping the measured thickness value within the accuracy range (0.4%)

*** Measurement on 500µm DSP Si wafer. Values correspond to the criterion of keeping the measured thickness value within the accuracy range (0.4%)

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.

