

Filmetrics® F54

Thin-Film Mapping Analyzer

Automated Thin-Film Thickness Mapping System

Thin-film thickness of samples up to 450mm in diameter are mapped quickly and easily with the F54 microscope-based spectral reflectance system. Autofocus and small spot size are standard features on this advanced spectral reflectance tool. The motorized r-theta stage moves automatically to selected measurement points and provides thickness measurements as fast as two points per second. The F54 has the same precision high-lifetime stage that performs millions of measurements in our production systems.

Choose one of dozens of predefined polar, rectangular, or linear map patterns, or create your own with no limit on the number of measurement points. The entire desktop system is set up in minutes and includes easy-to-use, intuitive software.

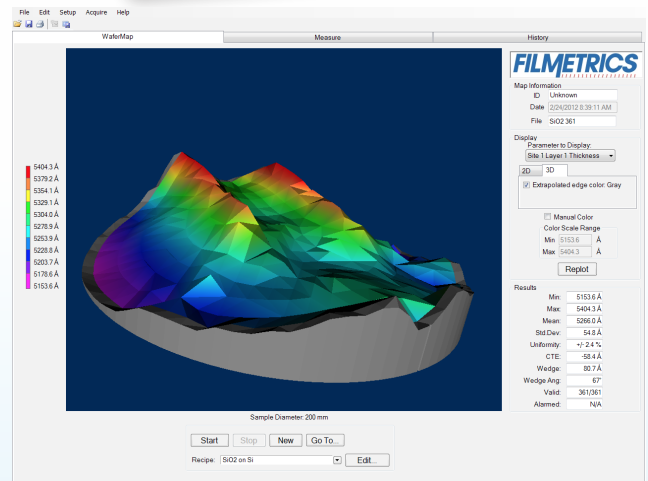
Example Layers

Virtually any smooth, non-metallic film may be measured. Examples include:

SiO ₂	SiN _x	DLC	Polysilicon
Photoresist	Polymer layers	Polyimide	Amorphous Silicon

Example Applications

Semiconductor Fabrication	LCD
Photoresist	Cell Gaps
Oxides/Nitrides/SOI	Polyimide
Wafer Backgrinding	ITO
MEMS	Optical Coatings
Photoresist	Hardness Coatings
Silicon Membranes	Anti-Reflection Coating
AlN/ZnO Thin-Film Filter	Filters



The Filmetrics Advantage

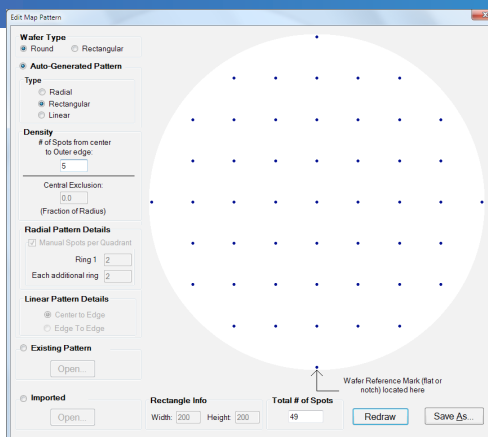
- World's leader in tabletop thin-film measurement
- 24-hour phone, e-mail, and online support
- Intuitive analysis software, standard with every system

Additional Features

- Built-in online diagnostics
- Standalone analysis software included
- Sophisticated history function for saving, reproducing, and plotting results

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F54 Thin-Film Analyzer



Measurement Specifications*	F54-UV	F54-UVX	F54	F54-EXR	F54-NIR
Thickness Range w/5X Objective	-	-	20nm-40µm	20nm-120µm	100nm-120µm
Thickness Range w/10X Objective ¹	4nm-35µm	4nm-115µm	20nm-45µm	20nm-115µm	100nm-115µm
Thickness Range w/15X Objective ¹	4nm-30µm	4nm-100µm	20nm-40µm	20nm-100µm	100nm-100µm
Thickness Range w/50X Objective	-	-	20nm-2µm	20nm-4µm	100nm-4µm
Min. Thickness to Measure n & k ²	50nm	50nm	100nm	100nm	500nm
Accuracy: The Greater of	1nm or 0.2%	1nm or 0.2%	2nm or 0.2%	2nm or 0.2%	3nm or 0.4%
Precision ³	0.02nm	0.02nm	0.02nm	0.02nm	0.1nm
Stability ⁴	0.05nm	0.05nm	0.05nm	0.05nm	0.12nm
General Specifications					
Spectrometer Wavelength Range	190-1100nm	190-1700nm	380-1050nm	380-1700nm	950-1700nm
Light Source	External D ₂ + Halogen		Internal Halogen		
Dimensions	14W x 19D x 22H (in); 35.5W x 48.3D x 55H (cm)				
Weight	41 lbs. (19 kg)				
Power	100-240VAC, 50-60Hz, 20W				

Computer Requirements	
Processor Clock Speed	1.4GHz min
Interface	USB 2.0

Operating System	
PC	Windows 10 - Latest Windows (64-bit)
MAC	OS X Catalina - Latest MAC OS Running Parallels

Spot Size	500µm Aperture	250µm Aperture	100µm Aperture	50µm Aperture
5X Objective	100µm	50µm	20µm	10µm
10X Objective	50µm	25µm	10µm	5µm
15X Objective	33µm	17µm	7µm	3.5µm
50X Objective	10µm	5µm	2µm	1µm

	200mm Chuck	300mm Chuck
Sample Size	≤ 200mm diameter	≤ 300mm diameter
Speed (Typical with Vacuum Chuck)	5 points - 5 sec. 25 points - 14 sec. 56 points - 29 sec.	5 points - 8 sec. 25 points - 21 sec. 56 points - 43 sec.

* Material and microscope dependent

¹ Reflective objective

² Using 5X objective

³ 1σ of 100 measurements of 1µm SiO₂-on-Si. Value is average of 1σ over 20 days.

⁴ 2σ of daily average of 100 measurements of 1µm SiO₂-on-Si, measured over 20



Specifications subject to change without notice. 2022 KLA Corporation Rev. 05.22 Printed in the USA.