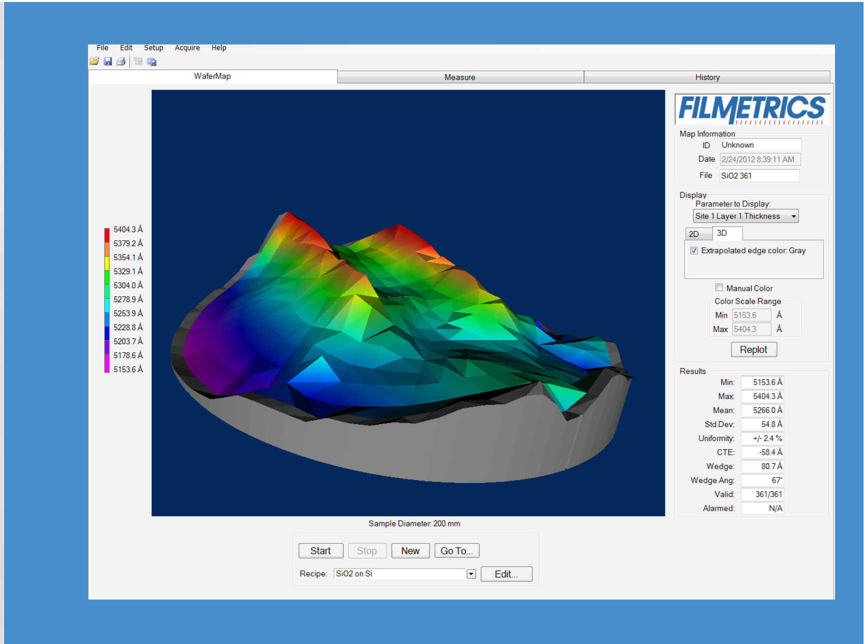
F54

Thin-Film Mapping Analyzer



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 software included
- Sophisticated history function for saving, reproducing, and plotting results

Automated Thin-Film Thickness Mapping System

Thin-film thickness of samples up to 450 mm in diameter are mapped quickly and easily with the F54 advanced spectral reflectance system. 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 can be used by anyone with basic computer skills.

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

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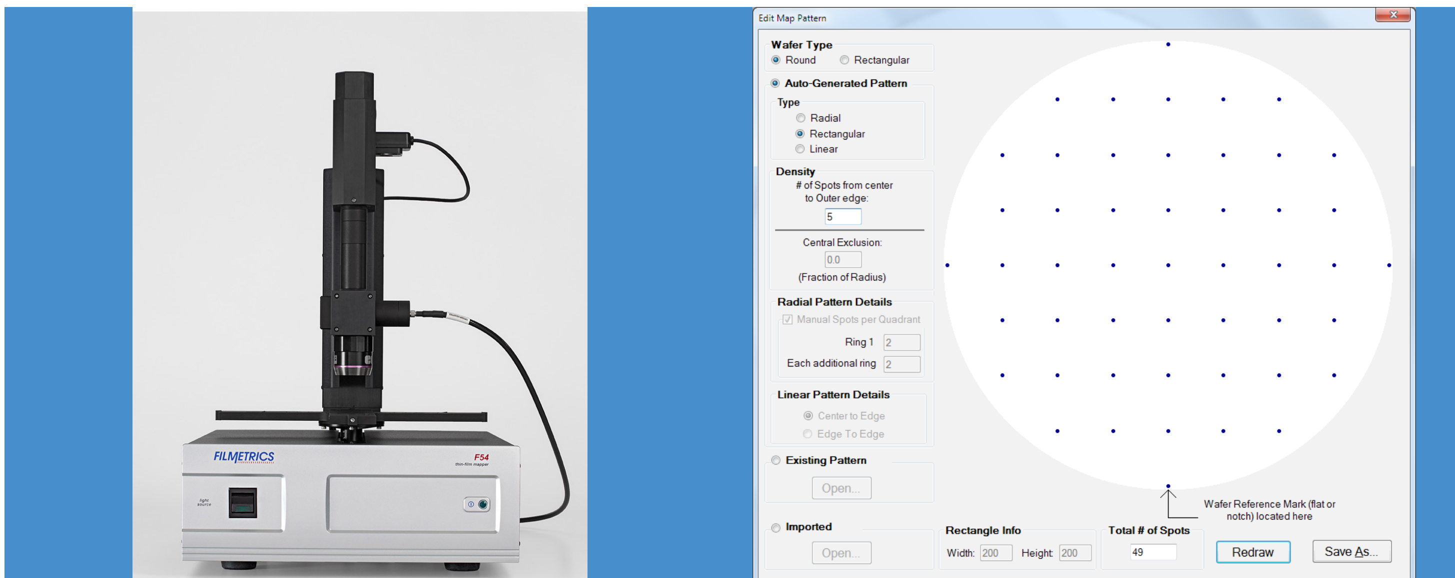

Measurement Specifications	F54-UV	F54-UVX	F54	F54-EXR	F54-NIR
Thickness Range with 5X Objective*:	-	-	20nm-40μm	20nm-120μm	100nm-120μm
Thickness Range with 10X Objective*[1]:	4nm-35μm	4nm-115μm	20nm-45μm	20nm-115μm	100nm-115μm
Thickness Range with 15X Objective*[1]:	4nm-30μm	4nm-100μm	20nm-40μm	20nm-100μm	100nm-100μm
Thickness Range with 50X Objective*:	-	-	20nm-2μm	20nm-4μm	100nm-4μm
Min. Thickness to Measure n and k *[2]:	50 nm	50 nm	100 nm	100 nm	500 nm
Accuracy*: The Greater of	1 nm or 0.2%	1 nm or 0.2%	2 nm or 0.2%	2 nm or 0.2%	3 nm or 0.4%
Precision[3]:	0.02 nm	0.02 nm	0.2 nm	0.02 nm	0.1 nm
Stability[4]:	0.05 nm	0.05 nm	0.05 nm	0.05 nm	0.12 nm
General Specifications					
Spectrometer Wavelength Range:	190-1100 nm	190-1700 nm	380-1050 nm	380-1700 nm	950-1700 nm
Light Source:	External D2 + Halogen		Internal Halogen		
Dimensions:	14W x 19D x 22H (in) 35.5W x 48.3D x 55H (cm)				
Weight:	41 lbs. (19 kg)				
Power Requirements:	100 - 240 VAC, 50 - 60 Hz, 230 W				

Computer Requirements	
Processor Clock Speed:	1.4 GHz min
Interface:	USB 2.0

Operating System	
PC:	Windows XP (SP2) - Latest Windows (64-bit)
Mac:	OS X Lion - Latest Mac OS running Parallels

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

	200 mm Chuck	300 mm Chuck
Sample Size:	≤ 200 mm diameter	≤ 300 mm 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 1 μm SiO_2-on-Si. Value is average of 1σ over 20 days.

[4] 2σ of daily average of 100 measurements of 1 μm SiO_2-on-Si, measured over 20 days.

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Filmetrics – A KLA Company
10655 Roselle St., San Diego, CA 92121
Tel: (858) 573-9300 Fax: (858) 573-9400
www.filmetrics.com

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