

F20

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

Applications

Semiconductor Films

- [Photoresist](#)
- [Process Films](#)
- [Dielectrics](#)

Optical Coatings

- [Hardcoat Thickness](#)
- [Anti-Reflection Coating](#)

Displays

- [OLED](#)
- [Glass Thickness](#)
- [ITO & Other TCOs](#)

Biomedical

- [Parylene](#)
- [Medical Devices](#)

Thin-Film Measurements from 1 nm to 10 mm

Whether you are looking for the thickness, optical properties, or just the reflectance and transmittance of your materials, the F20 has you covered. Set up takes mere minutes by a USB connection, and results are available in under a second. Thanks to its modular nature, the F20 is adaptable to a variety of applications:

- Measurement of thickness, refractive index, reflectance, and transmittance of:
 - Single or multiple-layer film stacks
 - Freestanding membranes
 - Liquid films or air gaps
- Measurements under many conditions, including:
 - On flat or curved surfaces
 - With a spot-size down to 20 μm
 - In desktop, XY mapping, or in-line configurations

All of this functionality is bundled with an intuitive software package and backed by our immediate 24-hour/5-day phone and internet support. That's the Filmetrics advantage! Give us a try!

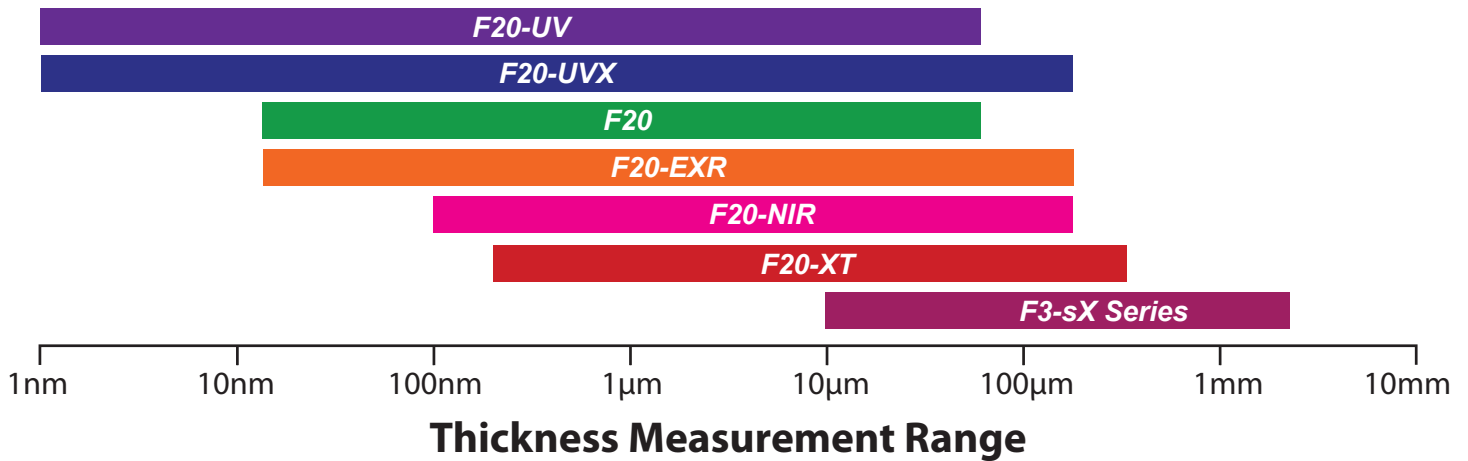
Example Layers

Virtually any smooth, translucent, or lightly-absorbing film may be measured. This includes most dielectrics and semiconductors. Some examples are:

SiN _x	TiO ₂	DLC
SU-8	Polymers	AIQ
Amorphous Silicon	ITO	CIGS

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General Specifications	F20-UV	F20-UVX	F20	F20-EXR	F20-NIR	F20-XT
Spectrometer Wavelength Range:	190 - 1100 nm	190 - 1700 nm	380 - 1050 nm	380 - 1700 nm	950 - 1700 nm	1440 - 1690 nm
Light Source:	External, D2 + Halogen			Internal, Halogen		
Measurement Specifications						
Thickness Measurement Range*:	1 nm - 40 μm	1 nm - 250 μm	15 nm - 70 μm	15 nm - 250 μm	100 nm - 250 μm	0.2 μm - 450 μm
Min. Thickness to Measure n & k*:	50 nm	50 nm	100 nm	100 nm	500 nm	2 μm
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%	5 nm or 0.4%
Precision ¹ :	0.02 nm	0.02 nm	0.02 nm	0.02 nm	0.1 nm	1 nm
Stability ² :	0.05 nm	0.05 nm	0.05 nm	0.05 nm	0.12 nm	1 nm
Spot Size:	Standard 1.5 mm, Optional down to 20 μm					600 μm
Sample Size:	From 1 mm to 300 mm diameter and up					

General Requirements

Power:	100 - 240 VAC, 50 - 60 Hz, 0.3-0.1 A
Computer Interface:	USB 2.0
Certifications:	CE EMC and safety directives

Operating System

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

* Material dependent

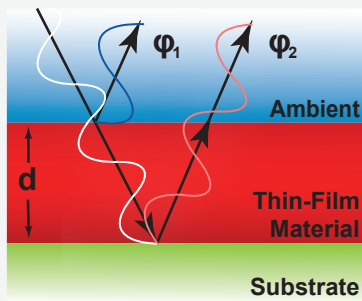
¹ 1σ of 100 measurements of 500 nm SiO₂-on-Si. Average of 1σ over 20 successive days.

² 2σ of daily average of 100 measurements of 500 nm SiO₂-on-Si over 20 successive days.

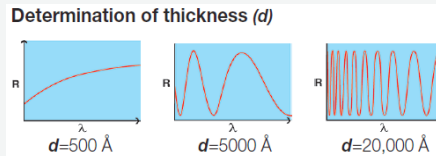
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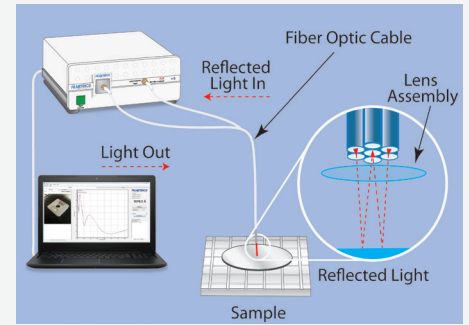
How Does It Work?



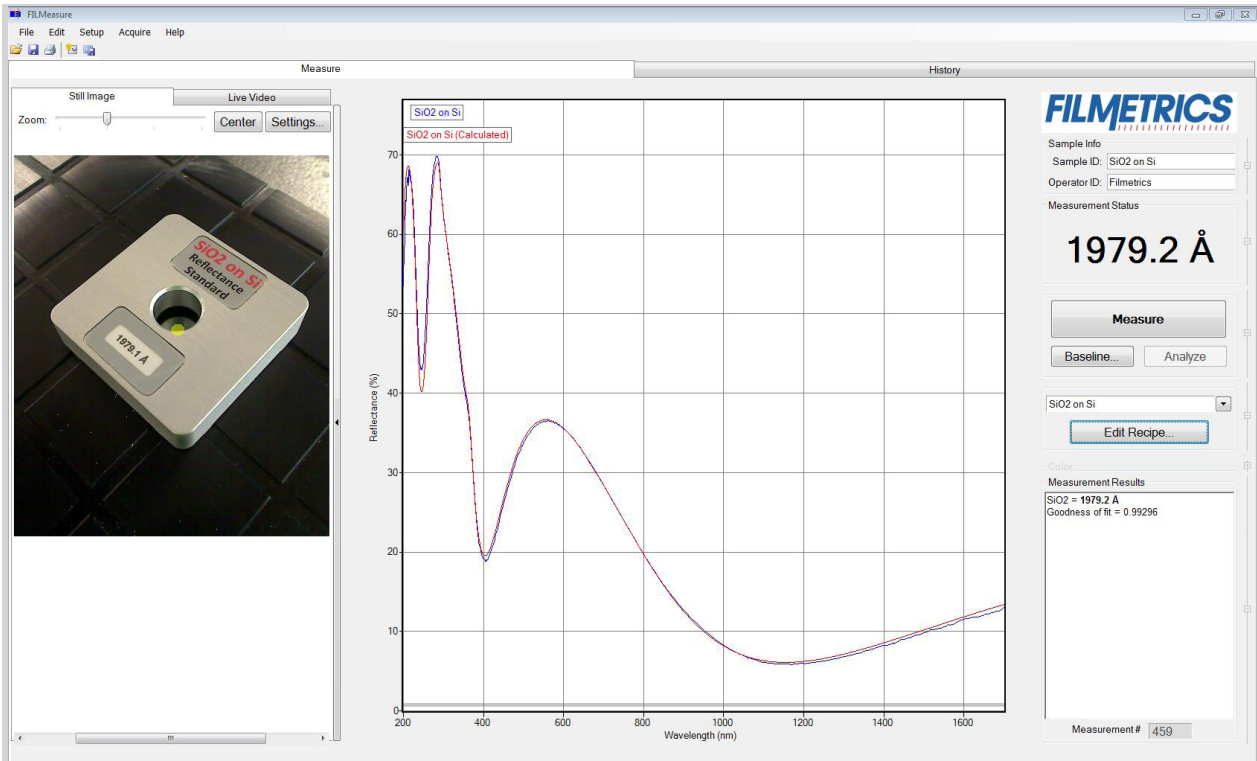
When light encounters an interface between two materials, it is partially reflected. The wave-like nature of light causes reflections from multiple interfaces to interfere with each other, resulting in oscillations in the wavelength spectrum of the reflected light.



From the frequency of these oscillations we determine the distance between the different interfaces and thus the thickness of the materials (with more oscillations meaning greater thickness). Other material characteristics are also measured, such as refractive index and roughness.



Software Built with the User in Mind



The FILMeasure software package provides you with an enormous degree of control and is easily adapted to your needs. Doing research? FILMeasure comes with access to thousands of different material files, and you can also easily measure your own refractive index values.

Looking for a quality control tool? Integrated access control allows you to lock down your recipes, prohibiting users from accidentally changing settings and keeping your results stable and reliable. And this is just a small selection of the standard features; here are a few more of our favorites:

1. Optional SampleCam allows for integrated measurement spot viewing and sample identification.
2. Interactive user interface allows you to select the features you'd like to display or hide.
3. Comprehensive history function recovers previous results in seconds and tracks and plots statistical information and measurement trends.

Optional Accessories

Automate Your Day

Confirm the uniformity of your coating with the XY10 mapping stage, turning your F20 into a measurement automaton.



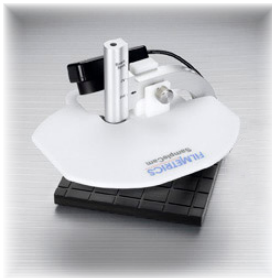
Handling Curved Surfaces

Make quick work of difficult applications, like curved surfaces or rough substrates, with our CP-1 probe.



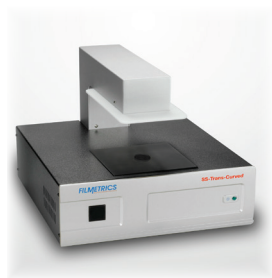
An Extra Eye on Your Samples

Track your measurements with confidence using the measurement spot-locator function of our SampleCam.



Transmittance at All Angles

Use the SS-Trans-Curved to measure the transmittance of flat and curved samples.



Thinking Small?

Mount your F20 to almost any microscope with the MA-Cmount-F20KIT. Great for patterned samples.



Measurements Made Even Easier

Simply set your sample on the CS-1 to get an immediate thickness reading.

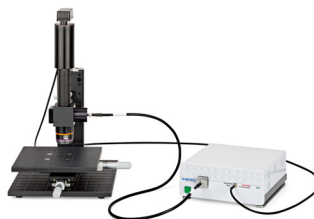


Looking to Do More?

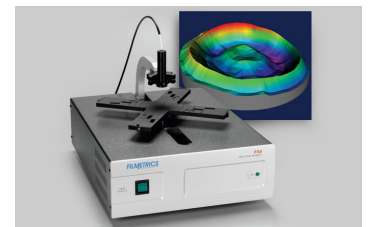
Extend your capabilities even further with these related products:



F30 for in-line applications



F40 for microspot measurements



F50 for automated mapping of samples up to 590 mm in size