

Filmetrics® F20

Thin Film Analyzer

Thin Film Measurements from 1nm to 450µm

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:

- Measure 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 20µm
 - Tabletop, 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:

Si_xN_y	TiO_2	DLC
SU-8	Polymers	AlQ
Amorphous Silicon	ITO	CIGS



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

Semiconductors

- Photoresist
- Process Films
- Dielectrics

Optical Coatings

- Hardcoat Thickness
- Anti-Reflection Coating

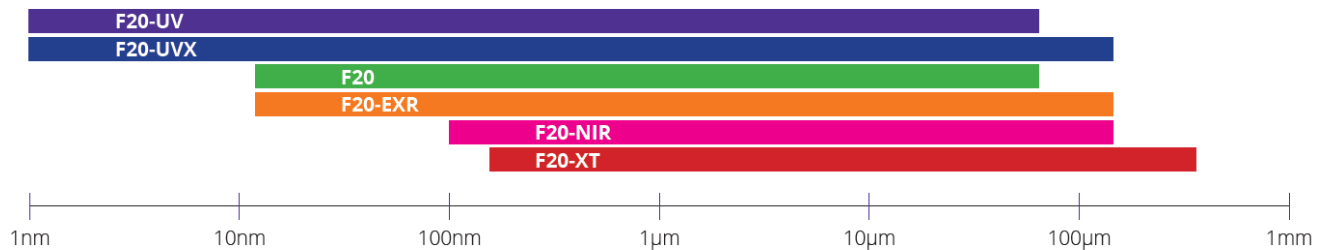
Displays

- OLED
- Glass Thickness
- ITO & Other TCOs

Biomedical

- Parylene
- Medical Devices

Thickness Measurement Range



General Specifications	F20-UV	F20-UVX	F20	F20-EXR	F20-NIR	F20-XT
Spectrometer Wavelength Range	190-1100nm	190-1700nm	380-1050nm	380-1700nm	950-1700nm	1440-1690nm
Light Source	External, D2 + Halogen		Internal, Halogen			

Measurement Specifications	F20-UV	F20-UVX	F20	F20-EXR	F20-NIR	F20-XT
Thickness Measurement Range*	1nm – 40µm	1nm – 250µm	15nm – 70µm	15nm – 250µm	100nm – 250µm	0.2µm – 450µm
Min. Thickness to Measure n&k*	50nm	50nm	100nm	100nm	500nm	2µm
Accuracy*: the greater of	1nm or 0.2%	1nm or 0.2%	2nm or 0.2%	2nm or 0.2%	3nm or 0.4%	5nm or 0.4%
Precision¹	0.02nm	0.02nm	0.02nm	0.02nm	0.1nm	1nm
Stability²	0.05nm	0.05nm	0.05nm	0.05nm	0.12nm	1nm
Spot Size	Standard 1.5mm, Optional down to 20µm					600µm
Sample Size	From 1mm to 300mm diameter and up					

General Requirements	
Power	100-240VAC, 50 - 60Hz, 0.3 - 0.1A
Computer Interface	USB 2.0
Certifications	CE EMC and Safety Directives

* Material dependent

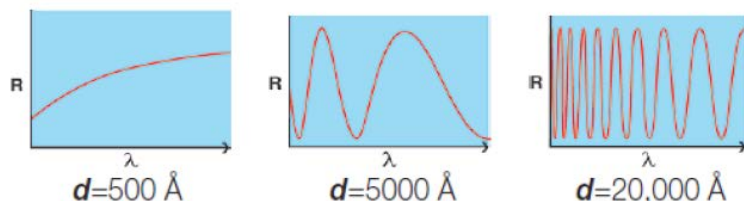
¹ 1σ of 100 measurements of 500nm SiO₂-on-Si. Average of 1σ over 20 successive days.

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

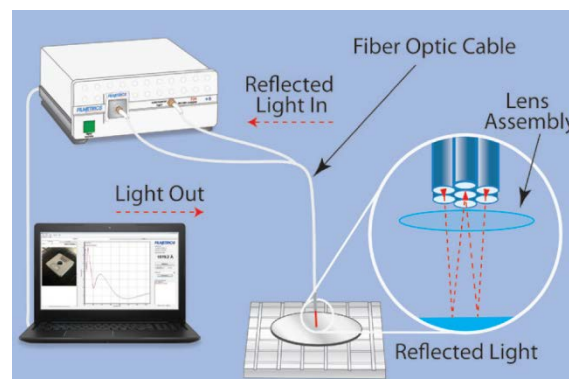
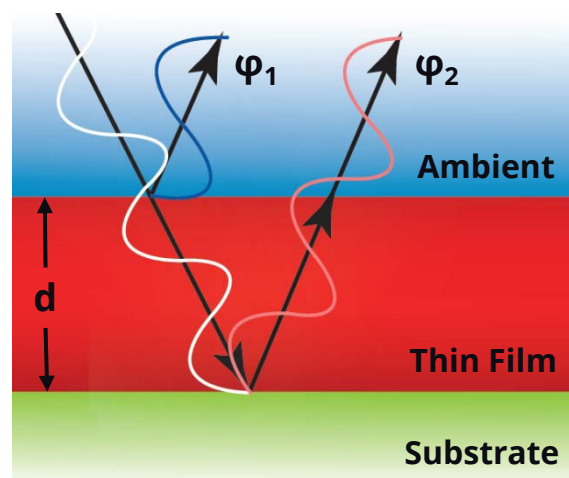
Operating System	
PC	Windows 10 – Latest Windows (64-bit)
MAC	macOS Catalina – Latest macOS running Parallels

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 (ϕ_1 , ϕ_2) to interfere with each other, resulting in oscillations in the wavelength spectrum of the reflected light (see examples in the figures below).

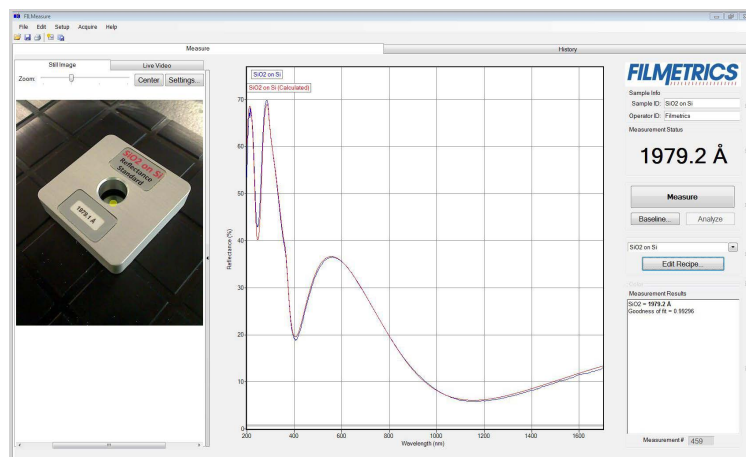


From the frequency of these oscillations, the distance between the different interfaces can be determined and thus, the thickness d of the thin film (with a larger number of oscillations corresponding to a greater thickness). Other material characteristics can also be measured, such as refractive index 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 more than 1,000 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. 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.

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.



Measurements Made Even Easier

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



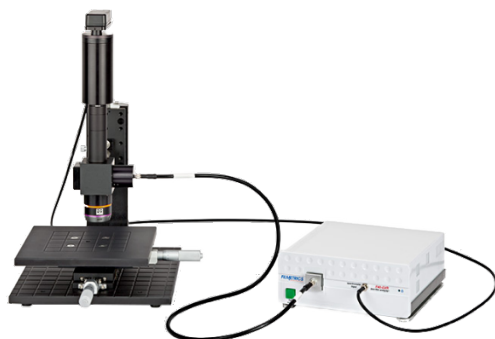
Thinking Small?

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

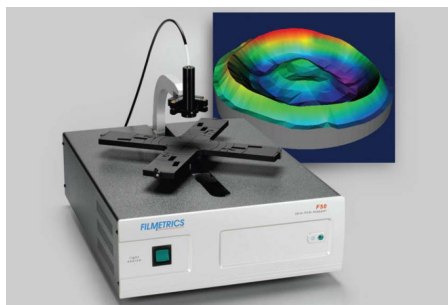


Looking to do More?

Extend your capabilities even further with these related products:



F40 for microspot measurements



F50 for automated mapping of samples up to 450mm in size



F54-XY for automated mapping of samples up to 300mm in size

KLA SERVICES

From tool installation and system optimization to productivity enhancements and global supply chain management, KLA Services is a trusted partner to customers around the world -- delivering an unrivaled experience focused on maximizing tool performance and availability.

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