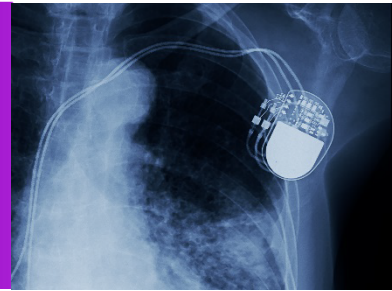


Parylene Coatings

Filmetrics® F-Series Thin Film Metrology Tools



Parylene Coating Thickness

The use of parylene coatings has expanded from the traditional application of coating PCBs for military, aerospace, and automotive markets to one that now includes industrial, medical, and electronic applications. The growth in the parylene coating market has occurred because of the unique properties that parylene coatings provide.

The advantage of the parylene coating process is that the coatings are formed from a gaseous phase with an intermediate liquid stage. This unique coating process provides completely conformal coatings that cover sharp edges, points, crevices, and exposed internal surfaces with a very uniform film thickness and pinhole-free film. This coating is highly-reliable, lightweight, stress-free, transparent, and bio-compatible, making it an outstanding barrier layer.

How it Works

The Filmetrics thin film metrology tools use spectral reflectance, where light is reflected off the sample and then analyzed over a range of wavelengths. Light reflected from the top and bottom interfaces of the film can be in-phase so that reflections add, or out-of-phase so that reflections subtract. The result is characteristic intensity oscillations in the reflectance spectrum. Simply put, the thicker the film, the more oscillations that will be present in the reflectance spectrum.

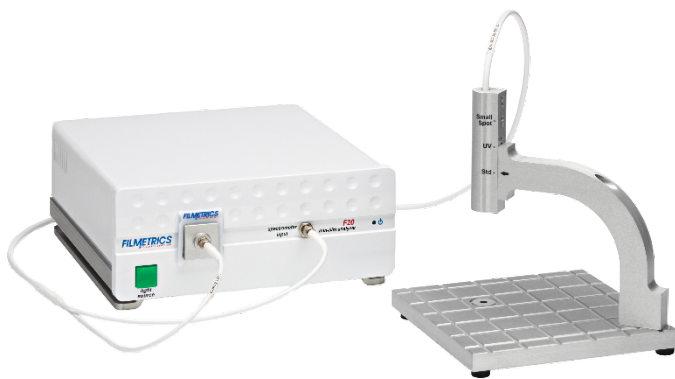


Figure 1. The F20 Thin-Film Analyzer.

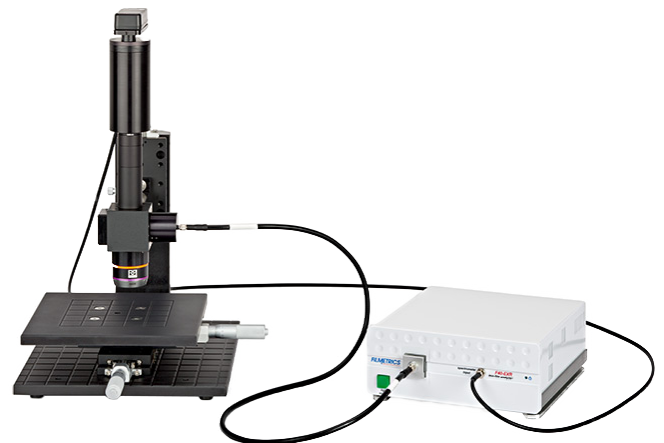


Figure 2. The F40-EXR with optical microscope.

The Filmetrics® Advantage

Filmetrics® offers a broad range of solutions for measuring the thickness of parylene coatings ranging from $< 1\mu\text{m}$ to $> 75\mu\text{m}$. Filmetrics has delivered many thin-film measurement systems into the parylene market, which has provided us with a strong understanding of the measurement requirements for parylene applications.

Whether you need to measure large spot samples with the F20 series or small spot samples with our F40 series, Filmetrics can deliver the capabilities that you need ...

- Printed Circuit Boards
 - Military, Aerospace, Electronic Systems, etc.
- Medical Devices
 - Coronary Stents, Needles, etc.
- Electronics
 - Coated Wires, Devices, etc.

Dependable Results

Filmetrics' tools offer precise and consistent results from user to user, unlike manual measurement techniques such as micrometers. Our easy-to-use FILMeasure™ thin-film analysis software is a proven, robust package that determines film thickness from the reflectance spectrum.

FILMeasure Software User Interface

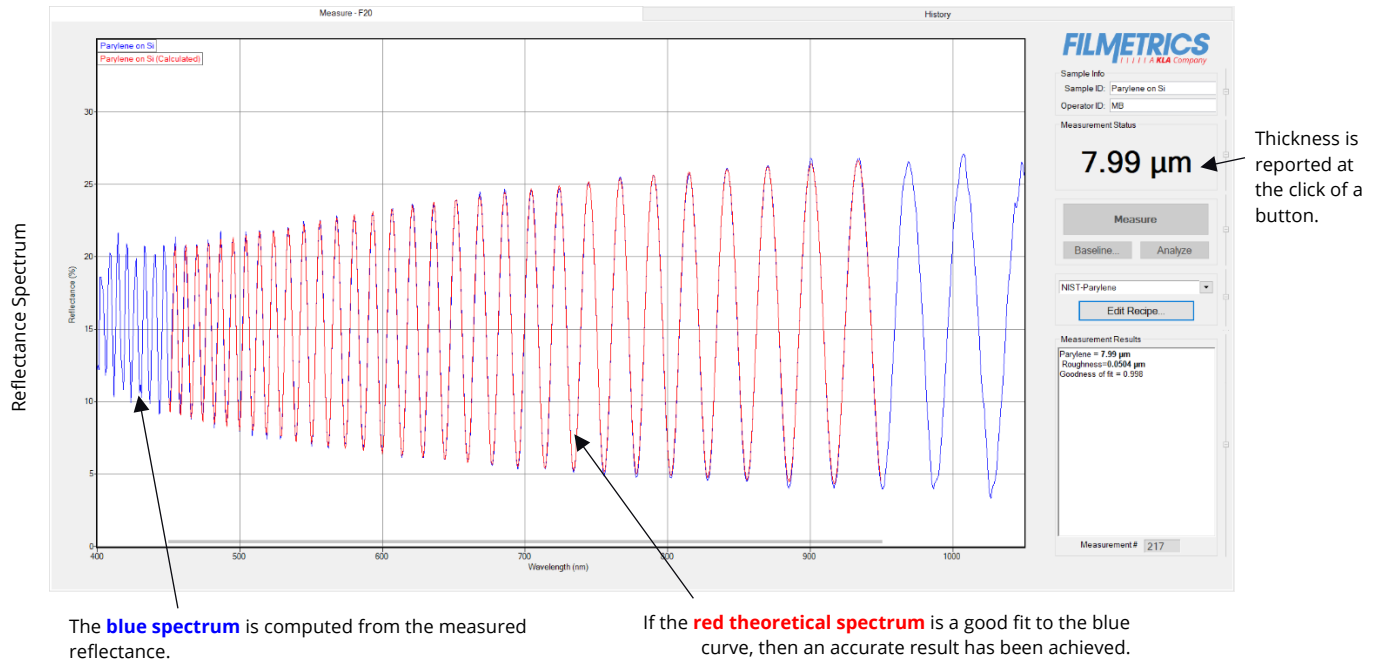


Figure 3. An example of a coating thickness measurement from a nominal 8μm coated part using the F20 system.

The software calculates film thickness based upon spectral matching, as shown in Figure 3. The visual fit in the graphical display provides confirmation of high-confidence results.

About the Filmetrics F20

[Filmetrics F20s](#) are general-purpose film thickness measurement instruments that are used in thousands of applications worldwide. Thickness and refractive index can be measured in less than a second. Like all of our thickness measurement instruments, the F20 connects to your computer's USB port and sets up in minutes. The different F20 configurations are distinguished primarily by the thickness measurement range, which in turn is determined by the instrument's wavelength range. The standard F20 is our most popular product.

About the Filmetrics F40

The [F40 product family](#) is for applications that require a spot size as small as 1μ. For most microscopes, the F40 simply attaches to the Cmount adapter, which is the industry standard for video camera mounting.

The F40 thickness measurement instrument comes complete with an integrated color video camera that allows exact monitoring of the film thickness measurement spot. Thickness and index can be measured in less than 1s. Like all of our tabletop film thickness measurement instruments, the F40 connects to your computer's USB port and sets up in minutes.

About the Filmetrics F3-CS

Filmetrics® designed the [F3-CS](#) specifically for measurement of small witness or coupon samples. With the hands-free measurement mode, samples are measured by simply placing them face-down on the stage. The system has everything necessary to measure hundreds of types of layers, no matter if they are on transparent or opaque substrates.

Contact Us to Measure Your Sample

[Please contact us](#) with questions, or to schedule thickness measurement on your medical devices, or 3D surface topography using the [Filmetrics Profil3D® optical profiler](#), which quickly and easily generates surface measurements of roughness, step height, or other features of interest.

KLA SUPPORT

Maintaining system productivity is an integral part of KLA's yield optimization solution. Efforts in this area include system maintenance, global supply chain management, cost reduction and obsolescence mitigation, system relocation, performance and productivity enhancements, and certified tool resale.