F30

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

Applications

- MBE
- MOCVD
- Materials Research

Optical Coatings

- Hardness Coatings
- Filters
- Anti-Reflection Coatings

The Most Powerful Tool Available for Monitoring Thin-Film Deposition

Measure deposition rates, layer thickness, index, and uniformity of semiconductors and dielectric layers in real-time with the F30 spectral reflectometry system.

Example Layers

MBE and MOCVD: Smooth and translucent, or lightly-absorbing films, may be measured. This includes virtually any semiconducting material, from AlGaN to GaInAsP.

Benefits

- Dramatically improves productivity
- Low cost—Can pay for itself in months
- Accurate—Measures to better than ±1%
- Fast—Measurements in seconds
- Non-invasive—Totally outside of deposition chamber
- Easy to use—Intuitive Windows™ software
- Turn-key system sets up in minutes

Multiple Uses

The F30 is several instruments in one: it is a predeposition calibration tool for making adjustments to a process recipe before an actual deposition run, a real-time monitor of the thin-film deposition process, a fault sensor, and a post-deposition evaluation instrument for the completed multiple-layer structure.

Measurement of Deposition

For growing layers, the F30 continuously monitors sample reflectance at one or more wavelengths. The deposited layer's optical properties produce unique time-dependent interference oscillations in the reflectivity signal. "Virtual interface" analysis of these oscillations allows for easy determination of the layer's deposition rate and optical constants within 1% accuracy. Underlying layers are automatically accounted for, so no knowledge of previous deposition is required.

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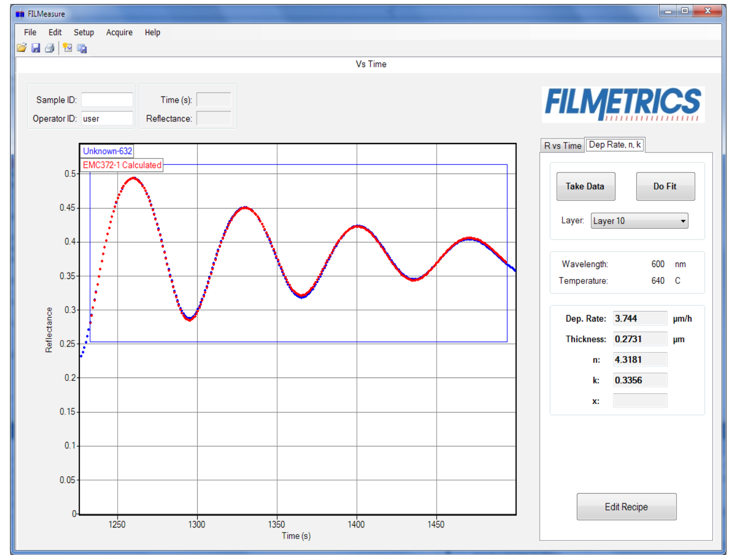


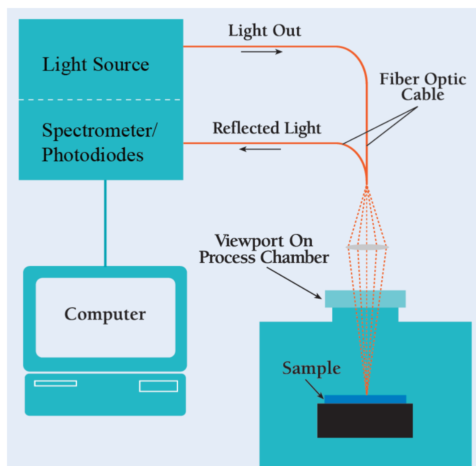
Concurrent measurement of deposition rate at two or more locations reveals sample uniformity. The F30 also provides an effective way to detect the surface roughening associated with the eutectic transitions used for temperature calibration.

Measurement of Static Layers

For static (i.e., unchanging) layers, the F30 measures the sample's reflectance spectrum, and then analyzes this data with powerful simulation routines to determine the layer's thickness and optical constants. Any layer in a stack of up to four layers may be measured in this way (see F20 datasheet for more details).

A System That Suits Your Needs — Including Multi-Wafer Applications

The F30 includes everything required for in-situ measurements: spectrometer, light source, fiber-optic cable, and lens assemblies. Special lens mounts are available for restricted-access applications, such as is often encountered in MOCVD. A simple multi-wafer/



The F30 is fully contained outside of the process chamber.

wobble-correction option is also available — no moving parts or complicated synchronization hardware is required.

Intuitive Windows™ Interface

After a brief set-up operation, most measurements require only a few mouse operations. Novice users can be trained in minutes. Measured data, along with measurement details, are easily saved and exported with standard Windows™ file-saving and clipboard methods. Custom software integration is easy using the Filmetrics FIRemote.NET assembly.

Thickness:	
Thickness Range (F30):	15 nm - 70 µm
Thickness Range (F30-UV):	1 nm - 40 µm
Min. Thickness (Virtual Interface Method):	>100 nm, Typically
Accuracy (Typical):	< 1%
Spectrometer:	
Wavelength Range (F30):	380 -1050 nm
Wavelength Range (F30-UV):	190 -1100 nm
General:	
Spot Size:	Probe-to-sample distance x 0.007
Light Source:	Regulated Tungsten-Halogen Optional long life LED (>50,000 hours) for photodiode only configuration

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