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Find the *KLA Tencor / Filmetrics F30* at our website: *Click HERE*

THIN-FILM MEASUREMENT SYSTEMS

# F30



## *The Most Powerful Tool Available for Monitoring Thin-Film Deposition*

Measure deposition rates, layer thickness, optical constants (n and k), 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 material, from AlGaN to GaInAsP.

### Benefits

- Dramatically Improves Productivity
- Low Cost—Can pay for itself in months
- Accurate—Measure 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

R&D 100

FILMETRICS

### APPLICATIONS

**MBE**

**MOCVD**

**MATERIAL RESEARCH**

**OPTICAL COATINGS**

- Hardness Coatings
- Anti-Reflection Coatings
- Filters

# F30

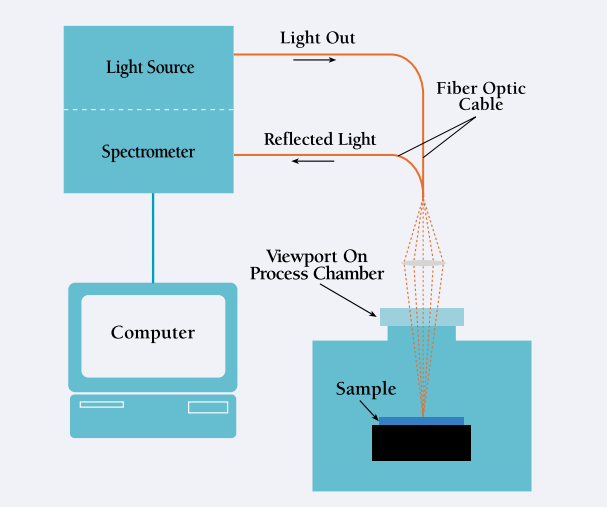
**The F30 combines spectral reflectance with advanced analysis software for a multipurpose thin-film measurement tool.**

## Multiple Uses

The F30 is several instruments in one: it is a pre-deposition 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




*The F30 is fully contained outside of the process chamber.*

interference oscillations in the reflectivity signal. "Virtual interface" analysis[1] 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.

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 eight layers may be measured in this way (see F20 data sheet 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/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. Dynamic Data Exchange allows for easy integration with other programs.

### Performance Specifications

| | |
|---|---|
| Min. Thickness (Growing Layer) | >100 nm, typically |
| Thickness Range (Static Layer) | 15 nm to 50 µm (F30)<br>100 nm to 250 µm (F30-NIR) |
| Spot Size | Probe-to-sample distance x 0.007 |
| Accuracy (typical) | 1% |

### System Specifications

| | |
|---|---|
| Spectrometer Type | 512-element photodiode array |
| Wavelength Range | 400 - 1000 nm (F30)<br>950 - 1700 nm (F30-NIR)<br>400 - 1700 nm (F30-EXR) |
| Light Source | Regulated 7W tungsten-halogen lamp |

[1] W.G. Breiland and K.P. Killeen, J. Appl. Phys. 78.6726

FILMETRICS

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