Optical Thin-Film Measurement Instrument (Model TF-168)

Quick and Easy Tool for Thin Film Measurement

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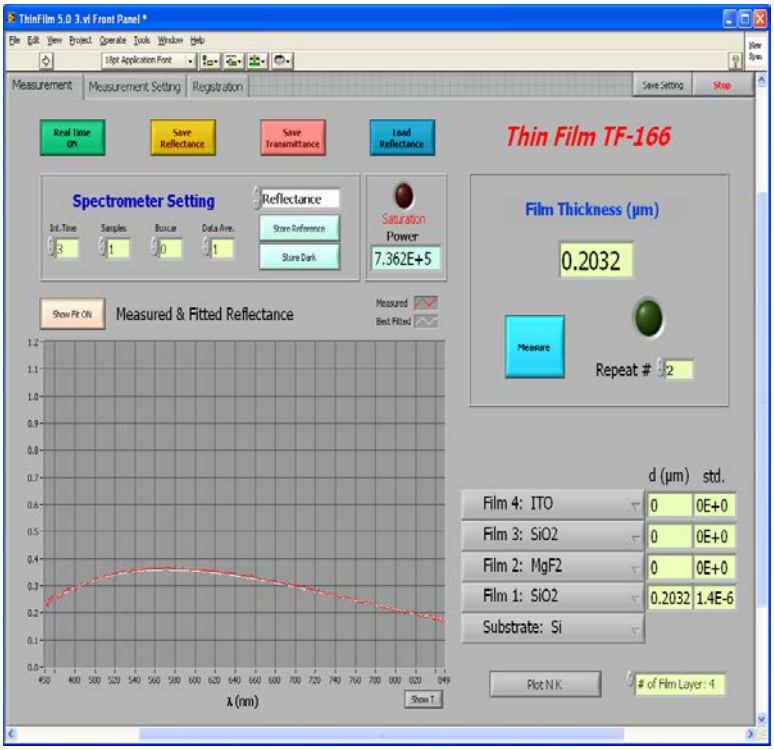
Thin films are widely used in a variety of applications including

- **dielectric coatings on optical components**
- **coated optical filters**
- **semiconductor fabrication on wafers**
- **liquid crystal devices**
- **coatings on cellphone panels**

Based on interference spectral analysis of multi-reflection beams, this instrument functions non-contact optical measurement of thickness, refractive index, and absorption index of various thin films and coatings.

With nm measurement accuracy and convenient operation, much easier to operate than traditional ellipsometer, it is a must have device for thin film research, coating industry, and semiconductor fabrication industry.



Measurement Features

- **Substrate refractive index and absorption index measurement**
- **Film thickness measurement, mean and standard deviation**
- **Film material refractive index and absorption index evaluation**
- **Saving of measured spectral dependent reflectance data**
- **Data loading of previously saved reflectance data**
- **Statistics of measurement results**
- **User friendly cursor controlled measurement of computed refractive index and absorption index**
- **Flexible choice of computation wavelength range (within the PC based spectrometer)**
- **Flexible choice of guess thickness range to minimize computation time**
- **Convenient selection of film and substrate materials from an included database of various film and substrate materials**
- **Convenient addition of new material data table**

Specifications

Measurement Range	**20 nm to 50 µm (Thickness only), 100 nm to 10 µm (Thickness w/n & k)**
Measurement n & k	**Easy measurement of n & k with known film thickness**
Measurable layers	**Up to 4 layers**
Spot size	**Adjustable 0.8 to 4 mm**
Sample Size	**> 1 mm**
Wavelength Range	**380 nm – 1000 nm**
Thickness Accuracy	**The grater of ± 1 nm or ±0.5% of thickness**
Measurement Speed	**0.5 sec – 60 sec**
Repeatability	**0.1 nm**
Platform Size	**178 mm × 178 mm**
System Size	**203 mm Width, 241 mm Depth, 355.6 mm Height**
System Weight	**~ 11 lb**

Example thin film layer

SiO_2 CaF_2 MgF_2 Photoresist Polysilicon Amorphous SiNx TiO_2 Sol-Gel Polyimide Polymer Film

Example substrate material

Silicon Germanium GaAs ZnS ZnSe Acrylic Sapphire Glasses Polycarbonate Polymer Quartz

Thin Film Measurement System

- **One Thin Film Measurement main machine (110V-240V AC input) Including a Tungsten Halogen light source and a PC based optical mini spectrometer with USB interface**
- **Beam transfer, projection, and receiving fiber cables and optical assemblies**
- **New Span Thin-Film Measurement Software version 5.1**
- **One silicon wafer as reflectance standard**
- **One thickness standard sample**
- **PC requirement: RAM > 1GB, Windows 2000, XP, Vista, 7, 8**
- **Optional: C-mount adaptor and long fiber for microscope measurement (TF-168M)**