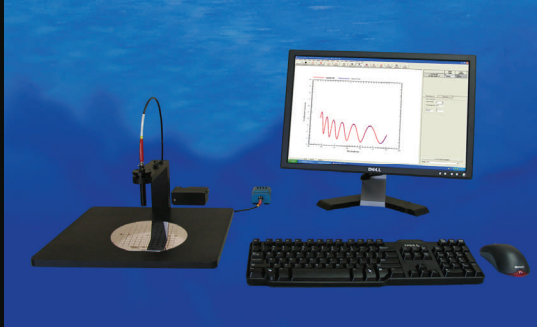


# FilmTek™ 1000, 1000M, and 1500

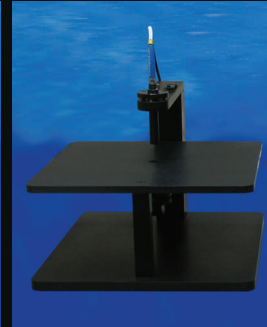
## Reflection and Transmission



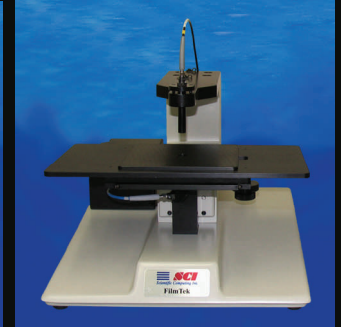
FilmTek™ 1000 Fixed Stage



FilmTek™ 1000M  
Manual XY Stage



FilmTek™ 1500  
Fixed Stage



FilmTek™ 1500  
Manual XY Stage

FilmTek™ 1000 is an accurate and economical film thickness measurement system. Utilizing reflection measurements from the visible to NIR, the FilmTek™ 1000 combines a fiber-optic spectrophotometer with revolutionary material modeling software to provide an affordable and reliable tool for the simultaneous measurement of film thickness, refractive index, and extinction coefficient. The FilmTek™ 1000M has a small spot size and comes equipped with a manual or automatic XY stage to accommodate 75-200 mm wafer sizes. The FilmTek™ 1500 measures both transmission and reflection at normal incidence and is ideal for transparent substrates.

### FilmTek™ 1000 Features

- **Versatile:** FilmTek™ 1000 incorporates SCI's generalized material model with advanced global optimization algorithms for simultaneous determination of:
  - Multiple layer thicknesses
  - Indices of refraction [  $n(\lambda)$  ]
  - Extinction (absorption) coefficients [  $k(\lambda)$  ]
- **Low Cost:** The cost of ownership of FilmTek™

1000 is a small fraction of comparable instruments.

- **No Special Knowledge Required:** FilmTek™ 1000 software is designed so that minimal experience in personal computers, thin film optical design, or measurement techniques is required.
- Complete "turn key" System: A fully integrated spectrophotometer measurement
- Non-contact and non-destructive.

### Applications

Virtually all translucent films ranging in thickness from 100 angstroms to approximately 150 microns can be measured with high precision. Typical applications include:

- **Semiconductor and dielectric materials**
- **Multilayer optical coatings**
- **Optical antireflection coatings**
- **Electro-optical materials**
- **Computer disks**
- **Coated glass**
- **Laser mirrors**
- **Thin Metals**

### Example Substrates

- Silicon
- SOI
- SOS
- GaAs
- Glass
- Aluminum
- SOG
- Photoresist
- Thin Metals
- Polysilicon
- Polyimide
- Low K Dielectric Films

### Example Films

- SiO<sub>x</sub>
- SiN<sub>x</sub>
- DLC
- a-Si
- a-C:H
- ITO

FilmTek™ 1000 / 1000M /1500 Technical Specifications	
Film thickness range:	10nm to 350µm (10nm to 150µm is standard)
Film thickness accuracy:	± 2Å for NIST traceable standard oxide 1000Å to 1µm
Spectral range:	380 to 950nm
FilmTek™ 1000 / 1500 measurement spot size:	2mm to 5mm (5mm standard)
FilmTek™ 1000M measurement spot size:	60µm (4x objective) or 24µm (10x objective)
Sample size:	2mm to 300mm standard
Spectral resolution:	0.2nm
Light source:	Regulated tungsten-halogen lamp (10,000 hrs lifetime)
Detector type:	3648 pixel Toshiba linear CCD array
Reflection and transmission static repeatability @ 600 nm (1σ):	0.01%
Measurement time:	< 1 sec per site (e.g., oxide film)
Data acquisition time:	0.2 sec
Computer	Multi-core processor with Windows™ XP

Films	Thickness	Measured Parameters	Precision (σ)
Oxide / Si	200-500 Å	t	0.5 Å
	500-10000 Å	t	0.25 Å
	1000 Å	t, n	0.25 Å / 0.001
Nitride / Si	200-10000 Å	t	0.25 Å
Photoresist / Si	200-10000 Å	t	0.5 Å
a-Si / Oxide / Si	20-10000 Å	t	0.5 Å