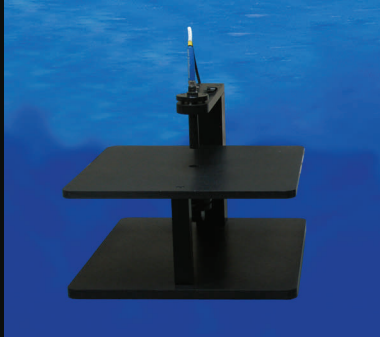
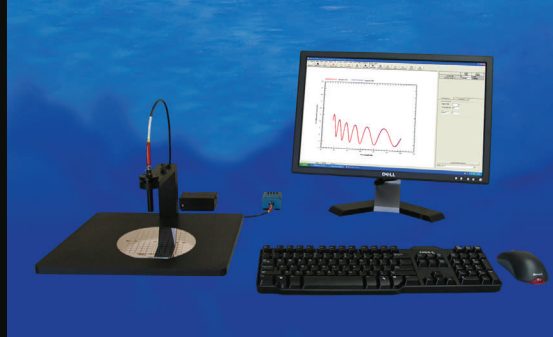


# FilmTek™ 1000 and 1500

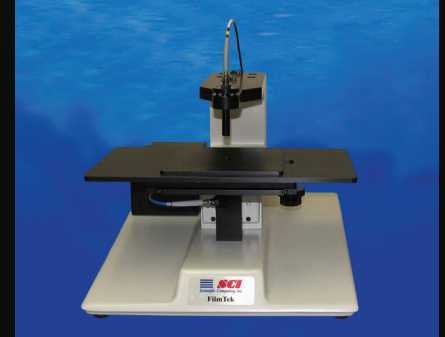
## Reflection and Transmission



FilmTek™ 1500 Fixed Stage



FilmTek™ 1000 Fixed Stage



FilmTek™ 1500 Manual XY Stage

FilmTek™ 1000 is the most affordable system for measuring reflection at normal incidence in the visible to NIR. 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, index of refraction, and extinction coefficient. FilmTek™ 1500 measures both transmission and reflection at normal incidence.

### 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

## Example Films

- SiO<sub>x</sub>
- SiN<sub>x</sub>
- DLC
- SOG
- Photoresist
- Thin Metals
- a-Si
- a-C:H
- ITO
- Polysilicon
- Polyimide
- Low K Dielectric Films

## Hardware

FilmTek™ 1000 includes:

- VIS/NIR spectrophotometer
- VIS/NIR light source
- Fiber optic cables
- Fixed stage with optics
- Computer with multi-core processor running Windows™ XP Operating System

FilmTek™ 1000 / 1500 Technical Specifications	
Film thickness range:	10nm to 350µm
Film thickness accuracy:	± 2Å for NIST traceable standard oxide 1000Å to 1µm
Spectral range:	380 to 950nm
Measurement spot size:	2mm to 5mm (5mm standard)
Sample size:	2mm to 300mm standard
Spectral resolution:	0.3-2nm
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 (e.g., oxide film)
Data acquisition time:	0.2 sec

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