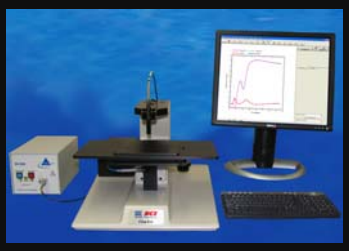
FilmTek™ 3000, FilmTek™ 3000M, and FilmTek™ 3000 PAR

Reflection and Transmission



FilmTek™ 3000



FilmTek™ 3000M



FilmTek™ 3000M Flat Panel Display



FilmTek™ 3000 PAR

FilmTek™ 3000 measures transmission and reflection of films deposited on transparent substrates. It is ideally suited for measuring the thickness and optical constants of very thin absorbing films deposited on transparent substrates. FilmTek™ 3000 combines fiber-optic spectrophotometers with SCI's proprietary material modeling software to provide an affordable and reliable tool for the simultaneous measurement of film thickness, index of refraction, and extinction coefficient. FilmTek™ 3000M has a small spot size (as small as 2 μm) and can be equipped with a large custom stage for flat panel display applications. When equipped with the polarimetry option, FilmTek™ 3000P combines spectroscopic reflection, transmission, and polarimetry measurements for the accurate and simultaneous determination of optical constants and birefringence. The FilmTek™ 3000 PAR utilizes SCI's patented parabolic mirror technology developed for the FilmTek™ 4000EM-DUV to achieve a 50 μm measurement spot size and simultaneously measure wavelengths from the deep ultra-violet to the near infrared. FilmTek™ 3000 provides unmatched accuracy, ease of use, and analytical power in a fully integrated package.

FilmTek™ 3000 Features

- **Versatile:** FilmTek™ 3000 incorporates SCI's generalized material model with advanced global optimization algorithms for simultaneous determination of:
  - Multiple layer thicknesses
  - Indices of refraction [n(λ)]
  - Extinction (absorption) coefficients [k(λ)]
  - Energy band gap [Eg]
  - Constituent and void fraction
  - Surface roughness
- Non-contact and non-destructive.
- Flexible: FilmTek™ 3000 hardware and software can be easily modified to satisfy unique customer requirements.

Optional Features

- Computer controlled automated stage
- Large custom stages for flat panel display applications
- Small spot size (2 microns)
- Pattern recognition (Cognex)
- Polarimetry
- Cassette to cassette wafer handling

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Applications

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

- Flat panel display
- Coated glass
- OLED
- Multilayer optical coatings
- Semiconductor and dielectric materials
- Optical antireflection coatings
- Laser mirrors
- Electro-optical materials
- Thin Metals

- SiOx
- SiNx
- DLC
- SOG
- Photoresist
- Thin Metals
- a-Si
- a-C:H
- ITO
- Polysilicon
- Polyimide
- Color Dye
- Alq_3
- HIL
- BEML
- GEML
- GETL
- REML

FilmTek™ 3000 / 3000M / 3000 PAR Technical Specifications	
Film thickness range:	1nm to 350μm (1nm to 150μm is standard)
Film thickness accuracy:	±1.5Å for NIST traceable standard oxide 1000Å to 1μm
Spectral range:	190nm to 1700nm (240nm to 950nm is standard)
FilmTek™ 3000 measurement spot size:	2mm to 5mm (5mm standard)
FilmTek™ 3000M measurement spot size:	5μm to 50μm
FilmTek™ 3000 PAR measurement spot size:	25μm to 300μm (50μm standard)
Sample size:	2mm to 300mm standard; custom sizes available
Spectral resolution:	0.3-2nm
Light source:	Regulated deuterium-halogen lamp (2000 hrs lifetime)
Detector type:	2048 pixel Sony linear CCD array / 512 pixel cooled Hamamatsu InGaAs CCD array (NIR)
Measurement time:	<2 sec (e.g., oxide film)
Data acquisition time:	0.5 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