FilmTek™ CD

Spectroscopic, Multi-Angle Optical CD Metrology

Optical Critical Dimension (CD) Metrology

FilmTek™ CD is a cost effective solution for non-destructive optical CD metrology applications, accurately and simultaneously determining period, line width, trench depth, and sidewall angle. Based on technology combining multiple-angle polarized spectroscopic reflection and spectroscopic

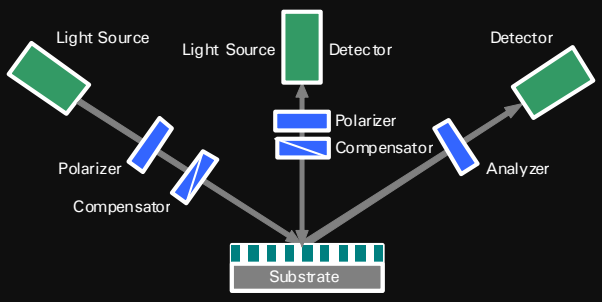




ellipsometry, FilmTek™ CD measures Psi, Delta, R_s, and R_p at 0 and 70 degrees to provide highly accurate measurements of profile information and film-thickness with a single tool.

FilmTek™ CD includes proprietary diffraction software with fast, real-time optimization. Real -time optimization allows the user to easily measure unknown structures with minimal setup time and recipe development while avoiding the time and complication associated with library generation. The combination of spectroscopic, multi-angle measurements with proprietary RCWA and Generalized Ellipsometry methods makes FilmTek™ CD ideally suited for advanced CD metrology applications with extremely small line widths. Available as a manual load, bench-top unit or fully automated with cassette to cassette wafer handling, FilmTek™ CD can be configured to suit a wide range of budgets and end use applications.

FilmTek™ CD Features



- Fast, non-destructive optical profile measurement
- Simultaneous measurement of thickness, refractive index, and multiple CD parameters including period, line width, trench depth, and sidewall angle
- Unique technology combines spectroscopic, multiple-angle polarized reflectometry and ellipsometry (240nm-1000nm) for industry leading sensitivity and performance
- FilmTek™ CD measures 0° and 70° R_s, R_p, Psi, and Delta to deliver the highest resolution thin film and critical dimension metrology on a single tool
- Fast, real-time optimization allows for a wide range of applications with minimal setup time (no library generation necessary)
- Small spot achieved with patented optical technology (measures within a 50x50 micron feature)
- FilmTek™ CD uses proprietary Rigorous Coupled Wave Analysis (RCWA) and Generalized Ellipsometry (4x4 matrix generalization method) techniques to allow for a wide range of feature sizes including very small line widths (as small as 10nm)

Applications

- Thickness, refractive index, and optical CD metrology
- Composition measurement
- Thickness of ultra-thin film stacks
- Broad range of critical dimension applications including gate CD, STI profile, contact holes, CMP trench, and patterned magnetic disks
- Broad range of film applications including diffusion, CVD, etch, CMP, and SOI

FilmTek™ CD Performance Specifications (Thin Films)

Films	Thickness	Measured Parameters	Precision (1σ)
Oxide / Si	0-1000 Å	t	0.03 Å
	1000-500,000 Å	t	0.005%
	1000 Å	t, n	0.2 Å / 0.0001
	15,000 Å	t, n	0.5 Å / 0.0001
	150,000 Å	t, n	1.5 Å / 0.00001
Photoresist / Si	1000-5000 Å	t	0.02%
	1000-5000 Å	t, n	0.05% / 0.0002
Nitride / Si	1000-5000 Å	t	0.02%
	1000-5000 Å	t, n	0.05% / 0.0005
Polysilicon / Oxide / Si	850 Å / 55 Å	t Poly , t Oxide	0.2 Å / 0.1 Å
	850 Å / 55 Å	t Poly , t Oxide	0.2 Å / 0.0005