

Compact High-speed Spectroscopic Ellipsometer [UNECS-2000]

UNECS-2000 is based on the Spectroscopic ellipsometry by utilizing the high-order retarders. It is the newest spectroscopic ellipsometer, which realized the high-speed and has a compact size. It has an excellent cost performance, which was impossible by the conventional spectroscopic ellipsometer. Its motorized stage can measure the sample up to the size of $\phi 200\text{mm}$. Users can use it very easily to get high accurate measurement results. It can be used for various applications such as R&D purposes and manufacturing lines etc.



Features

- ▶ **High-speed Measurement**
The high-order retarders are utilized to generate the spectrum carrying information about the wavelength-dependent multiple parameters of polarization of light. It requires no mechanical or active components for polarization-control, such as a rotating compensator and electro-optic modulator. Its snapshot method makes the high-speed measurement possible.
- ▶ **Compact Design**
The sizes of emitter and receiver of sensor unit are very small due to the spectroscopic ellipsometry by utilizing high-order retarders. The built-in light source and controller are mounted into the modern designed compact enclosure.
- ▶ **Excellent Cost-performance**
Other than the main measurement unit with a $\phi 200\text{mm}$ motorized stage, a laptop PC with data analysis software is configured as a default. Users can enjoy the excellent cost performance advantage of this new spectroscopic ellipsometer.
- ▶ **Customized Material Tables**
Users can easily to edit and add material table files by themselves.

- ▶ **Multi-layer Measurement**
It's possible to measure the multilayer film thickness up to 6 layers.

Applications

- ▶ Transparent or semitransparent thin films on the substrates up to $\phi 200\text{mm}$. (Oxide film, nitride film, photo resist film, ITO etc.)

Standard configurations

- ▶ Main unit
- ▶ Control PC (Laptop type)
- ▶ Operation manual (CD)

Option

- ▶ Standard sample (100nm, SiO₂/Si)

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Specifications

Model	UNECS-2000	
Measurement method	Spectroscopic ellipsometry	
Film for measurement *1	Transparent film and semitransparent film	
Wavelength	530 to 750nm	
Light source	Halogen lamp	
Light source power	100W	
Spot size	φ1mm (On substrate: 1mm × 3mm)	
Multi-layer film measurement	Film thickness: Max 6 layers Film thickness and optical parameter: 1 layer (Only the top layer)	
Angle of incidence	70° fix	
Film thickness Repeatability *2 *3 *4	0.1nm	
Film thickness measurement range *3	1nm to 2μm	
Sampling time *3	20ms to 3000ms (setting is possible)	
Analysis time *2	300ms	
Material data file *5	Si, SiO ₂ , Si ₃ N ₄ , a-Si, BK7, Ta, Cu, Au, Ni, W etc.	
Sample stage size	φ210mm	
Maximum sample size	φ200mm	
Stage	R	0 to 100mm Motor-driven
	θ	0 to 359° Motor-driven
	Z	0 to 10mm Manual
Software function	① Ψ (λ), Δ (λ) measurement ② Setting material data files ③ Calculation of film thickness (D), refractive index (N), extinction coefficient (K)	
Interface	USB × 2	
Control PC	Laptop PC	
PC Specifications	OS	Windows 7 (Japanese or English Version)
	CPU	Core™ 2 Duo Processor or better
	Memory	1GB or more
	HDD	160GB or more
	Drive	DVD Super multi drive
Dimensions W×D×H	500 × 512 × 428mm PC is excluded	
Weight	40kg PC is excluded	
Power	AC100V Max 3A, 50/60Hz	
Operation Environment	Ambient temperature	25±5°C
	Humidity	65%RH or less (Non condensing)

*1 The thickness measurement range for semitransparent films is different than that of transparent films.

*2 When only the film thickness value is assumed to be a fitting parameter, and the SiO₂ film (about 100 nm) on the Si substrate is measured.

*3 When SiO₂ single-layer film on Si wafer is measured.

*4 Standard deviation (1σ) when measuring it continuously ten times.

*5 Material data files can be added by the user.

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