TSC
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Spectroscopic Ellipsometer

SE MG-1000

SPECIFICATION

Fast spectroscopic data
5 sec for full spectra of { Δ, Ψ } over 350 ~ 820 nm (or 1.5 ~ 3.5 eV)

- UV option : 250 ~ 840 nm (or 1.5 ~ 5.4 eV)

Manually variable angle of incidence
45 ~ 90° with 5° step

Single body system
40 cm (W) × 30 cm (D) × 30 cm (H), 15 kg (typical)

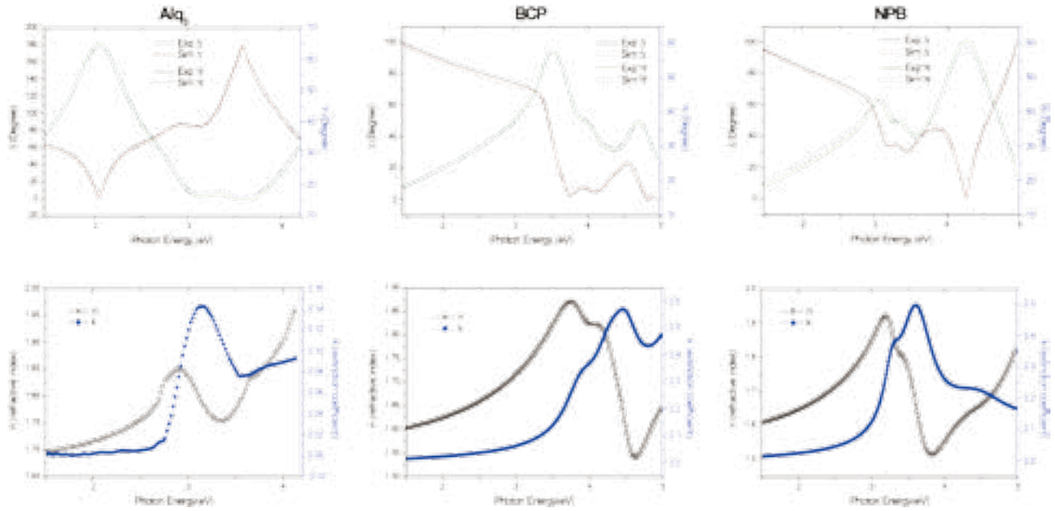
- UV-option requires external lamp power supply

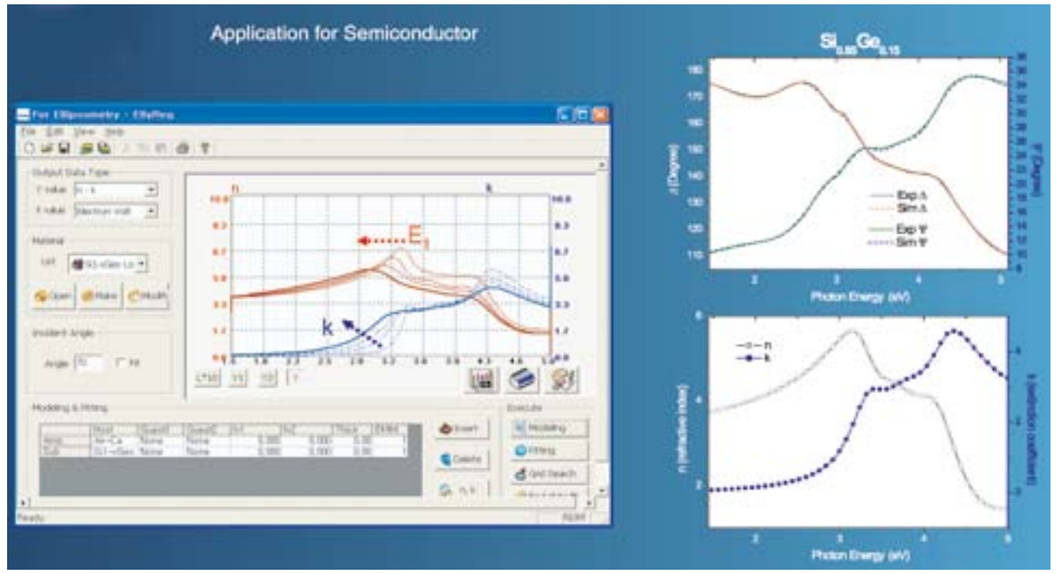
Easy operation
1) No set-up
2) No keys to control
3) Maintenance-free (except lamp)

User-friendly operation and analysis softwares

Other features
1) Sample size: (5 mm x 5 mm) ~ (200 mm x 200 mm)
2) Computer (Window 2000, XP): optional
3) Auto-collimator for easy alignment: optional

Application for OLED





Spectroscopic Ellipsometer

SE MF-1000

Most ellipsometers require calibration process in each measurement to find the azimuths of all optical elements. This is a lengthy and complicated process and causes wrong values.

SPECIFICATION

Fast spectroscopic data measurement
5 sec for full spectra of { Δ, Ψ } over 350 ~ 840 nm (or 1.5 ~ 3.5 eV)

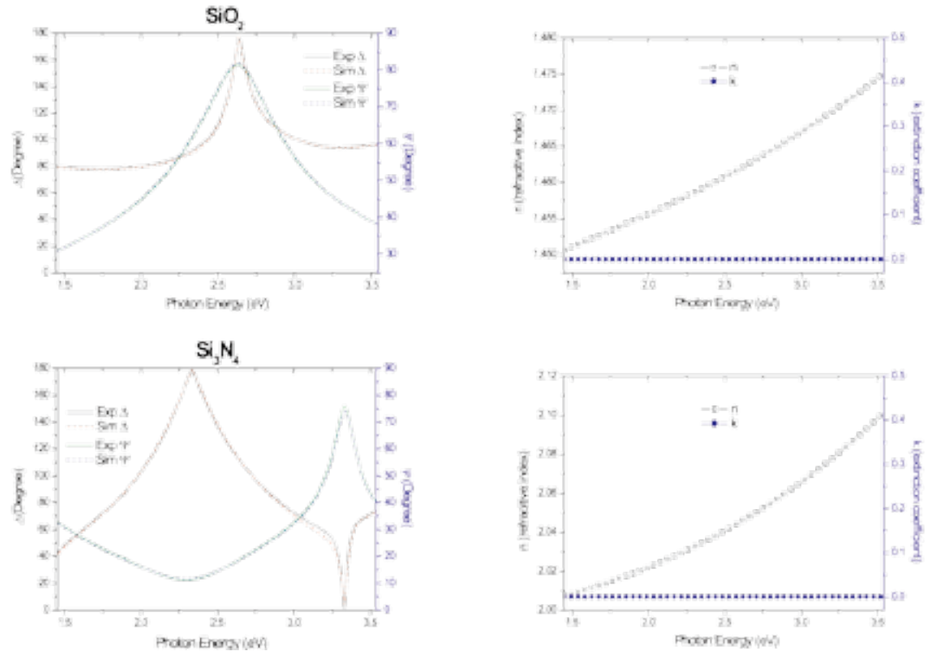
Manually variable angle of incidence
28 cm (W)× 20 cm (D)× 6 cm (H), 6kg

Easy operation in the world
1) no set-up
2) no keys to control
3) no effort for alignment (sample faces down)
4) maintenance-free (except lamp)
5) Calibration-free (patented)

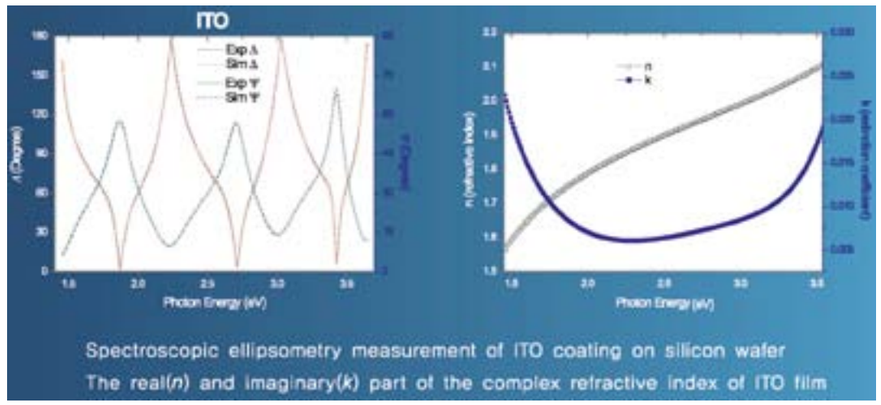
User-friendly operation and analysis softwares provided

Other features
1) Fixed angle of incidence: 70° ± 0.5°
2) Sample size: (8 mm x 8 mm) ~ (200 mm x 200 mm)
3) Computer (Window 2000, XP): optional

Application for OLED



Application for TCO



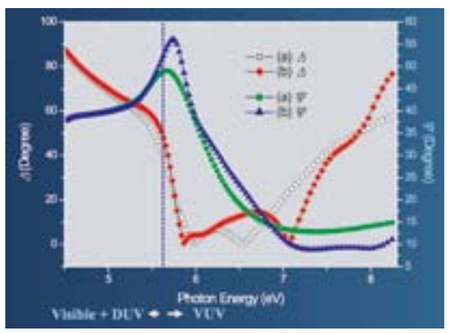
Vacuum UV Spectroscopic Ellipsometer

VSE-1000

SPECIFICATION

Spectral range down to VUV (145 ~ 320 nm)
Short nitrogen purge time < 5 mins.
Table top, small foot print.
Manually variable angle of incidence: 45°~90°

Application to 193 nm Immersion Lithography
Easy & accurement of thickness and refrctive index for very thin films of semiconductor ARC, PR, high *k*, oxide, nitride, pellicle and metal



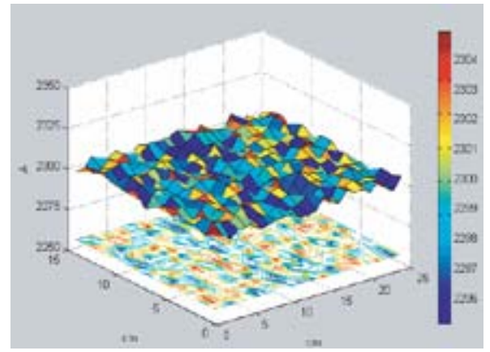
{ Δ, Ψ } spectra of the tri-layer structure of $^{1}ZrO_2/Al_2O_3/ZrO_2^{1}$ on c-Si.
Thickness*(nm)*: (a)^{1}3.0 / 0.4 / 5.5^{1}, (b)^{1}5.5 / 0.4 / 3.0^{1}.

In Visible + DUV, Δ and Ψ of two different samples cannot be differentiated.

But, in VUV, these two data are distinct,
so totally different behavior can be clearly seen.

Mapping Ellipsometer

MSEF-2000



Thickness mapping SE

SPECIFICATION

Moving head type (patent pending)
- Unlimited sample size & Smallest foot print compred to conventional sample moveing type (size limited)

Fast spectroscopic data measurement
1) 5 sec for full spectra of { Δ, Ψ } over 250 ~ 840 nm
2) Multi heads are possible for in-line mass production application.

Manually variable angle of incidence
45° ~ 85° with 5° step

Easiest operation in the world
1) Self alignment & Self calibration
2) Maintenance-free (except lamp)

User-friendly operation and analysis softwares

Imaging Ellipsometer

IE-1000

~ 0.1 nm thickness difference can be seen by IE-1000.

Thickness distribution of thin film can be imaged.

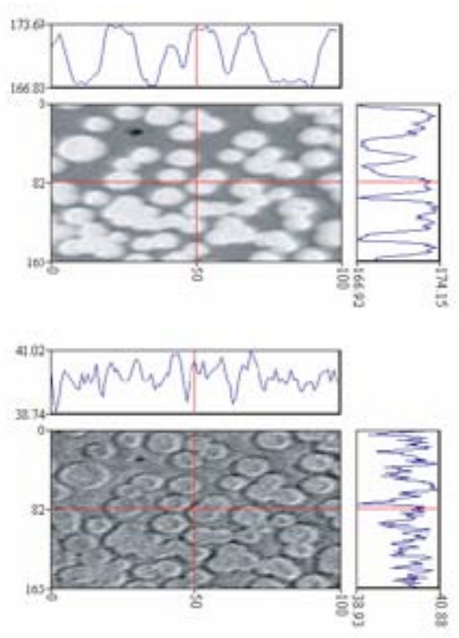
Thickness and optical images of semiconductor, display, and bio samples.

IE-1000 canshow the images which can not be seen by conventional microscope.

Defect of semiconductor and display can be seen directly.

Easy and fast operation.

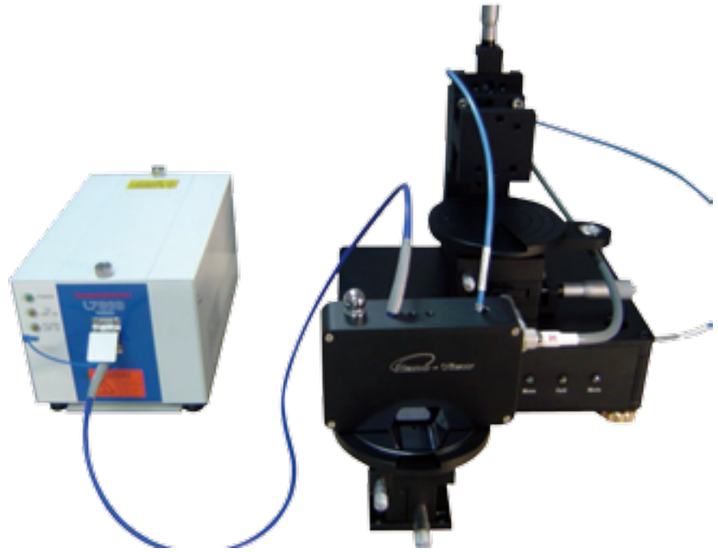
Metal induced crystallization cannot be seen with optical microscope



Δ (left) and Ψ (right) images of metal induced crystallization

Probe Ellipsometer

PSE-1000



SPECIFICATION

Fast spectroscopic data
5 sec for full spectra of { Δ, Ψ } over 400 ~ 850 nm (or 1.5 ~ 3.0 eV)

Separable mini probe
the smallest optimized system

Compact head size
14 cm (W)× 8 cm (D)× 4 cm (H), 1kg

Controller size
28 cm (W)× 20 cm (D)× 7 cm (H), 4kg

1) No set-up
2) No keys to control

User-friendly operation and analysis softwares

Other features
1) Fixed angle of incidence: 70° ± 0.5°
2) Sample size: (8 mm x 8 mm) ~
3) Computer (Window 2000, XP): optional

PhotoVoltaic Inspection

PV-ARC

SPECIFICATION

Application
Antireflective coating (ARC) on textured (poly-) crystalline silicon solar cell

Measure ment
Thickness, Reflectivity, *n&k*

Wavelength : 420 -950 nm(1.3 -3.0 eV) : expandable

Accuracy (thickness measurement on specularsample *)
104.5 nm for 104.8 nm SiO_2 on c-si
* accuracy can be dependent on the quality of film

Thickness range : 10 nm ~ 20 *μm*(depend on sample)

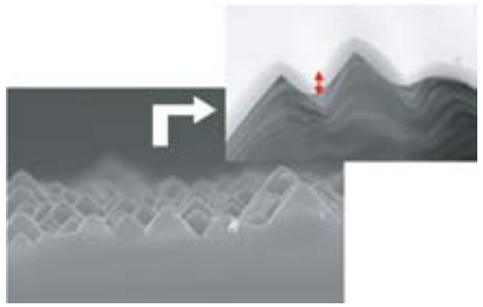
Data acquisition time : < 1s

Beam spot size : ~50 *μm*

Focusing of beam : Manual (optional auto-focus)

Sample	Thickness (nm)	
	Cross-sectional TEM	Nano-View
1 (SiN_x)	64 ~ 69	66.00
2 (SiN_2)	201 ~ 254	216.40
3 (SiN_2)	143 ~ 179	145.54
4 (SiN_x)	97 ~ 106	100.80
5 (SiN_x)	84 ~ 102	96.93

Sample stage
Manual X-Y stage (specify sample size and travel distance)
(optional automatic X-Y stage for mapping)



PV-ARC measurement of thin ARC film on textured photovoltaic device

PhotoVoltaic Inspection

PV-1000

SPECIFICATION

Spectroscopic EllipsometerHead Type

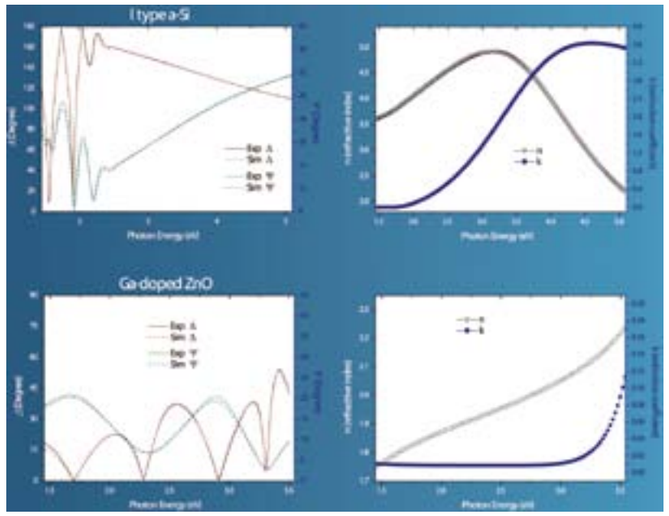
- Single Head Type
- Dimension : 25 cm (W) x 15 cm (D) x 30 cm (H)
- Fixed Incident Angle
- Wavelength Range : 350 ~ 850 nm
- Measurement Speed : ~5 s/spectrum

Gantry type stage for Spectroscopic EllipsometerHead

- Structure : Gantry Type (Linear motors) : X -Y -Z
- Operation : Step & Repeat
- Max. Speed : 0.5 *m/s*
- Position Accuracy : ±10 *μm*/ full scale
- Repeatability : ±5 *μm*/ full scale
- Flatness : ±30 *μm*/ full scale
- Straightness : ±15 *μm*/ full scale
- Pay Load : 20 kg at X-slide
- Vibration Isolation Table

Option

- ConfocalLaser Scanning Microscope
- Contact Angle
- 4-Point Probe
- etc.



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Rubbing Inspection

Rubbins-1000

SPECIFICATION

Rubbing Inspection

- 1-D (& 2-D)rubbing strengh distribution can be mapped for whole LCD panel.
- Deviation by measurement positions is less than 10% → Quick sampling is possible.
- Signal difference among different rubbing condition is distinctive.
- Underlying important part and/or defect can also be distinctively measured.
- In-line or off-line measurement
- Thickness, refractive index *{n, k}* and uniformity measurement of any thin film layer including polyimide layer. (optional)

Mapping Stage (whole glass for any generation)

- Travel : 2280 mm x 1920 mm for 7-G
- Max. speed : 0.5 *m/s*
- Clean room quality
- Vacuum chuck and booth

Rubbing Inspection for LCD
Rubbing Strength Measurement for Process Control
Whole Glass without Rotation, off- & In-Line System