Spectroscopic Ellipsometer for Thin Film Analysis

The Smart SE is an innovative spectroscopic ellipsometer for easy, fast and accurate characterization of single and multi layers thin films.

Fast and Accurate
The CCD detector of the Smart SE acquires accurate ellipsometric data from 450 nm to 1000 nm in less than 1 second.

Flexible
The optical head of the Smart SE are mounted on a compact manual angle of incidence that allows data acquisition from 45° to 90° by step of 5°.

Versatile
The Smart SE can be upgraded with:
- 200 mm or 300 mm mapping stage for uniformity measurements
- Automated variable angle of incidence for complex analysis
- In-situ configuration for real-time process monitoring

Unique Capabilities
- MyAutoView vision system for accurate positioning of the spot on any opaque or transparent substrates
- Seven automated micro spot size for measurements of patterned samples
- Full Mueller matrix measurement capability to study anisotropic and depolarizing samples

Thin Film Applications
- Film thickness from few Å to 15 µm
- Optical constants (n, k)
- Optical bang gap
- Gradient, anisotropy and depolarization
User Oriented Software Platform

The **Smart SE** integrates two level of software to fulfill both routine analysis with predefined recipes and advanced analysis with state-of-the-art ellipsometric algorithm:

### Auto Soft Routine Mode
- Auto Soft is an intuitive software that allows inexperienced users to acquire and analyze data in one push of a button
- Four interfaces to control the system, run an experiment, manage the data and perform maintenance test
- Predefined recipes are listed by applications and materials
- Fitting and tabulated data are presented on the same screen for fast reading (goodness of fit, thickness, optical constants, band gap, composition)

### DeltaPsi2 Advanced Mode
- Over the last two decades, HORIBA Jobin Yvon DeltaPsi2 Ellipsometric software has acquired a brand equity and is recognized as one of the most advanced and powerful commercial ellipsometric software
- Build your model to characterize anisotropic, depolarizing and graded samples
- Customized existing dispersion functions with our unique User Defined Formula and fit new material properties
- Export Recipe from DeltaPsi2 to AutoSoft for push button analysis

### Specifications

#### Standard configurations

- Spectra range: 450 nm to 1000 nm
- Spectra resolution: Better than 3 nm
- Light source: Combined Halogen and Blue LED
- Measurement time: < 1 sec. to 10 sec.
- Beam size: 75 µm x 150 µm, 100 µm x 250 µm, 150 µm x 150 µm, 250 µm x 250 µm, 250 µm x 500 µm, 500 µm x 500 µm
- Angle of incidence: 45° to 90° by step of 5°
- Sample size: Up to 200 mm
- Sample alignment: Manual 17 mm height adjustment and tilt
- Dimensions: 100 cm x 46 cm x 23 cm (W x H x D)

#### Performances

- Straight-through air accuracy: $\Psi = 45° \pm 0.05°$ $\Delta = 0° \pm 0.2°$
- Thickness accuracy on 1000 Å oxide: 0.4 %
- Thickness repeatability on 1000 Å oxide: $\pm 0.02\%$

#### Options

- Automated angle of incidence from 45° to 90° by step of 0.01°
- Motorized stage for 200 mm and 300 mm sample sizes
- In-situ adjustable flanges for mounting on process chamber
- Heating and cooling stages
- Liquid and electrochemical cells
- Cross hair auto-collimation system

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