

## Smart SE

### 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:

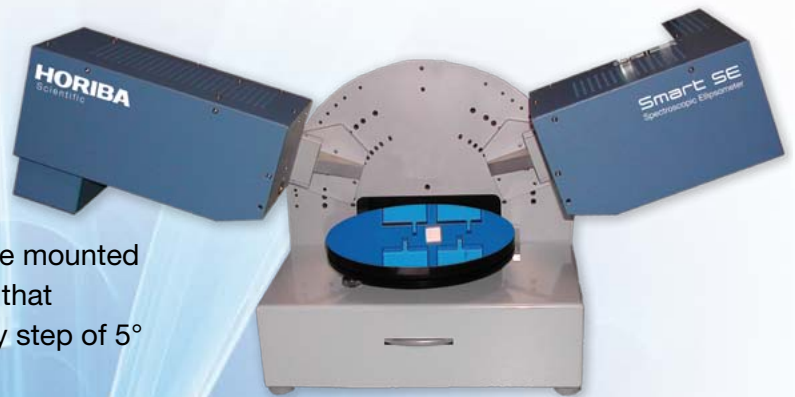
- 200 mm or 300 mm mapping stage for uniformity measurements
- Automated variable angle of incidence for complex analysis
- In-situ configuration for real-time process monitoring

#### ⇒ Unique Capabilities

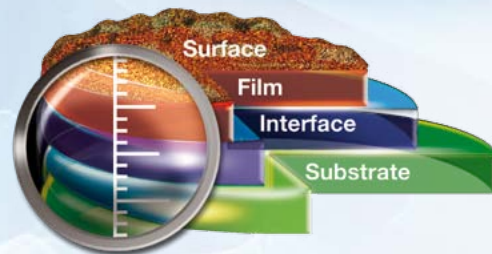
- MyAutoView vision system for accurate positioning of the spot on any opaque or transparent substrates
- Seven automated micro spot size for measurements of patterned samples
- Full Mueller matrix measurement capability to study anisotropic and depolarizing samples

#### ⇒ Thin Film Applications

- Film thickness from few Å to 15 μm
- Optical constants (n, k)
- Optical band gap
- Gradient, anisotropy and depolarization



**Smart SE**  
Visualization of the spot on the sample with the MyAutoView vision system



# User Oriented Software Platform

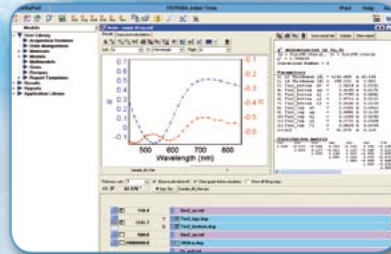
The **Smart SE** integrates two level of software to fulfill both routine analysis with predefined recipes and advanced analysis with state-of-the-art ellipsometric algorithm:

## ⇒ 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, 100 μm x 500 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:  $\Psi = 45^\circ \pm 0.05^\circ$   $\Delta = 0^\circ \pm 0.2^\circ$
- 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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