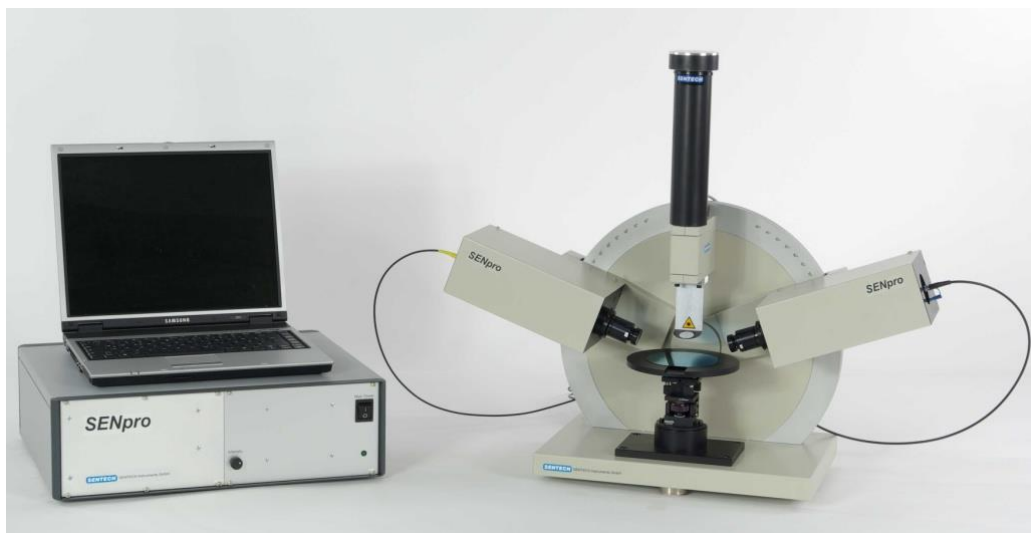


SENpro

VIS Spectroscopic Ellipsometer

Spectral range: 370nm ... 1050nm

Product description



- Cost effective spectroscopic ellipsometer to measure film thickness and optical constants between 370 nm and 1050 nm wavelength
- Measures more than 500 wavelength points in a few second
- SpectraRay/3 ellipsometer software with recipe mode for easy and quick measurements

1 General description

The **SENpro** represents a low cost spectroscopic ellipsometers featuring simple operation, measurement speed and combined data analysis of ellipsometric measurements at single or multiple angles of incidence.

It measures thickness, refractive index and extinction coefficient of single films and multilayer stacks. Reflection measurements at different incidence angles and transmission measurements can be carried out and combined with ellipsometric data. A compensator is used to correct automatically for depolarization effects caused by non-uniform films.

Smooth operation of the instrument is guaranteed by SENTECH's controller concept. While the software runs on a state of the art PC under Windows 7 the complete hardware is separately controlled by its own embedded microcontroller.

SENTECH's proprietary ellipsometer software **SpectraRay/3** comprises two modes of operation: recipe mode and interactive mode. The recipe mode allows for easy execution of repetitive applications. In interactive mode, ellipsometric measurements are enhanced by an interactive, guiding graphical user interface. The operation of **SpectraRay/3** is very intuitive and satisfies the demands for ease of use and multiple user operation.

SpectraRay/3 includes data acquisition, modeling, fitting, and extended reporting of ellipsometric data. It supports variable angle, multi-experiment, and combined photometric measurements. **SpectraRay/3** contains a huge library of materials data based on SENTECH measurements and literature data as well. The large number of dispersion models allows modeling of nearly any type of material.

The **SENpro** comprises the mechanical setup with a manual goniometer for multiple angle measurements, the optical components, the optical fibers, the controller, a desktop PC, and SENTECH **SpectraRay/3** software. Light source and detector are coupled to the optical arms of the ellipsometer by optical fibers.

2 Technical Specifications

Spectral Range:	370 nm – 1050 nm UV-VIS
Measurement time	Typically < 10 s for full spectra (more than 500 wavelength points)
Light source:	Stabilized Tungsten-Halogen lamp
Detection unit	Spectrometer with high order cutoff filters, controller with PC interface, connected to the ellipsometer receiver arm via optical fiber

Spectral resolution	2.4 nm FWHM
Ellipsometer operation principle	Step Scan Polarizer
Measurement spot size	2 mm
Goniometer	Mechanical Goniometer, variable from 40° to 90°, set in 5° steps
Sample stage	Fixed height and tilt adjustable stage with 150 mm diameter sample platform Other stages optional
Sample size	Up to 6 " wafers and pieces 8" sample platform optional
Sample height	Maximal sample height 8 mm Thicker samples on request
Sample alignment	Software based height measurement using ellipsometer beam, laser reflex tilt measurement
Software	SpectraRay/3 operating and analysis software Comprising: <ul style="list-style-type: none">• Interactive and recipe mode of operation• Automated system Calibration• Automatic setting up of optical and mechanical components• Easy and guided software operation including data acquisition, modeling, fitting and reporting• Complete experiments can be saved as recipes• Recipe mode for routine applications• Mapping module for computer controlled samples stages (description see also mapping options) Advanced reporting of measured and fitted spectra, measurement data, user comments, sample information in a Word-like environment Supports variable angle ellipsometric measurements of ψ ; Δ , Fourier coefficients s_1 , s_2 Models and fits bulk materials, single films and multilayer stacks Includes model editor and large library of material data Comes with large number of dispersion relations (e.g. Cauchy, Sellmeier, Leng, Tauc-Lorentz, Forouhi-Bloomer, Hamberg, Sernelius, EMA)

Models can include uniform layers, rough surface, interfaces, there is no fundamental limit for the number of fit parameters and layers in a layer stack

Simultaneous graphical display of experimental and fitted data

Comprehensive data presentation

Allows export and import of ASCII data

Controller unit

Comprising photo spectrometer, micro-controller, power supplies

Power requirement

Rated voltage: 115 / 230 VAC auto select (100-132 VAC or 207-264 VAC), Rated frequency: 50-60 Hz, Rated power: 350.

PC

optional

3 Optional items

Manual x-y stage

SE PXY

50 mm travel, 150 mm height and tilt adjustable sample platform

Motorized x-y stages

SE 14

50 mm x 50 mm motorized travel, 150 mm height and tilt adjustable sample platform

extensive mapping software to define scan raster and to display scans in various ways

vacuum chuck

SE 15

150 mm x 150 mm motorized travel, 150 mm height and tilt adjustable sample platform

extensive mapping software to define scan raster and to display scans in various ways

vacuum chuck

SE 16

200 mm x 200 mm motorized travel, 150 mm height and tilt adjustable sample platform

extensive mapping software to define scan raster and to
display scans in various ways

vacuum chuck

Computer

Hewlett-Packard PC

State of the art table top PC comprising TFT monitor,
keyboard, mouse
Three years worldwide warranty