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Laser Ellipsometer for Silicon Solar Cells

LE-100PV

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Overview

The design and marketing of equipment to meet today´s requirements in the domain of Solar Cells stem from our strong academic background and a wide experience in developing R&D tools for various applications in material sciences, semiconductor and photovoltaic research.

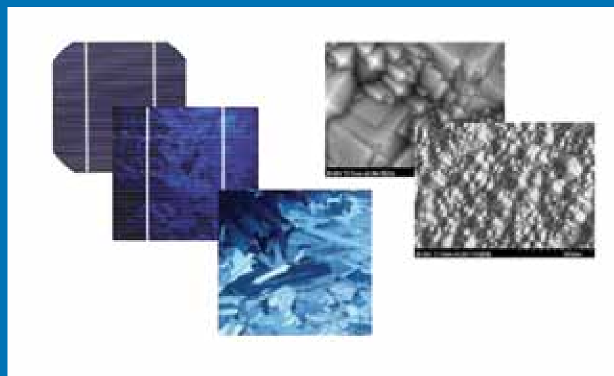
The LE-100PV is a cost effective, compact, innovative equipment. It is designed to measure the Thickness and Optical constants of Anti Reflective Coatings deposited on textured Silicon (mono-Si & multi-Si) substrates. The intuitive software allows the user to avail of pre-defined recipes that incorporates our vast Nk library created using our advanced Spectroscopic Ellipsometer (GES5E).

Features

LE-100PV

- Determines film thickness and optical constants (refractive index and extinction coefficient) for Anti Reflective coatings.
- R&D systems propose high precision measurements with varying angle of incidence. This permits also the characterization of the surface by Haze measurements.
- Integrated optics for stability and auto calibration.
- Rotating compensator for measurements of Psi (0° - 90°) and Delta (0° - 360°) allows increased sensitivity and calculation of the depolarization caused by rough interfaces.

- Microspot focusing optics for optimum signal collection.
- Specially adapted samples holder for cell sizes of 156 × 156 mm.
- IN LINE integration for rapid process control.
- Smart software PVECS compliant.



Silicon solar cells

Standard Specifications

PARAMETERS	SPECIFICATIONS
Measuring wavelength	632.8 nm He-Ne laser
Measuring time	100 ms - 2 sec
Film Thickness range	2 nm - 6000 nm
Sample stage	156 × 156 mm compatible
Goniometer	45° - 90° manual control Step 5°
Laser beam spot size	~ 1mm
Focused beam spot size on sample	< 1 mm
Sample alignment	Maximum signal detection for manual tilt & height adjustment.
Accuracy	Refractive Index: 0.0002 Thickness: 0.01 nm

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Advanced Options

HIGH RESOLUTION GONIOMETRIC BENCHES

Solutions adapted for texured multi-cells

Optimized angle of incidence (12-90°) can be easily achieved in order to obtain a maximum signal for thin films deposited on multicrystalline structured wafers. Furthermore, the measurement arms can be decoupled to measure back scattered light due to grain structure or saw damage. Structure characterization and Haze can be evaluated by this technique.

SPECIAL ADAPTED SAMPLE HOLDER

Solutions adapted for textured mono-Si cells

This specially adapted sample holder (156×156mm) has several special design features that optimize the signal acquisition and hence measurement quality for thin films deposited on monocrystalline structured wafers. The pyramidal structure can be oriented to obtain correct measurements while sample is maintained securely in place.

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