XPEQT Test Equipment

EP-12
Ellipsometric Porosimeter

EP-12 System

This configuration of Ellipsometric Porosimeter has the capability of measuring 200 and 300 mm wafers. Compact in size, and the very user friendly operation, make this a perfect tool for Research and Development on porous Low-K ILD materials.

Superior Performance

The Ellipsometric Porosimetry method is more simple and more fast than PALS, SANS/SXR, or other techniques used in determining Full Porosity, Pore Size Distribution, Pore Interconnectivity and Barrier performance.
On top of this, Young Modulus of inorganic ultra low-K dielectrics can also be determined. The accuracy of pore size determination is better than 0.2 nm.

The Perfect Technology

All measurements can be carried out in a film deposited on top of a silicon wafer or any smooth solid substrate. Because a laser probe is used, small surface areas can be analyzed. Therefor EP can be used on patterned wafers as it is a non-destructive technique.

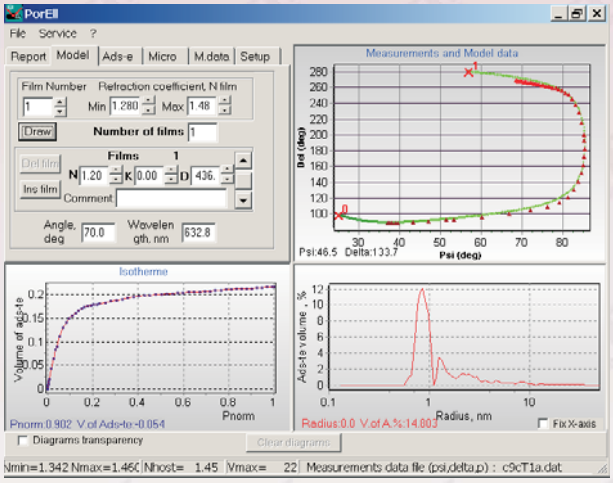
Metrology Options

The EP-12 can be configured to utilize a single wave length laser source for small surface areas, faster operation and porosity mapping, or a multi wave length source to give more information on extra characteristics like film swelling.

EP-12 Specifications

PorrEll Software

The software was developed to, if preferred, run on a remote computer if the EP-12 is hooked up to a network. It calculates open porosity, skeleton refractive index (necessary for calculation of full porosity), pore size and pore size distribution in approximately 3-5 seconds after receiving the data file from the system and loading the fitting parameters.
On top of this, it calculates multi-layer systems and therefore gives information on Barrier Layer performance and the so-called Pore Killers.



Facilities and Engineering Specifications

Wafer size:	200 and 300 mm wafers and samples
Range of the film thickness:	> 50 nm
Pore size:	0.2 - 50 nm
Ellipsometer:	λ = 6328 Å λ = 3500 - 8500 Å
Base vacuum:	10^{-6} mBar
Measurement temperature:	20°C
Organic adsorptives:	toluene, heptane, isopropyl alcohol
Nitrogen:	$1m^3/h$, 1-2 Bar
CD Air:	$2m^3/h$, 6-7 Bar
Exhaust	$5m^3/h$ Min
Electrical:	110/220VAC, 32A, 50/60Hz, Single Phase
Dimensions:	
System:	1600 x 1388 x 1630 mm
Rack:	600 x 600 x 1000 mm
Net Weight:	
System:	320 kg
Rack:	90 kg

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