Xper-IP

INTERFEROMETRIC PROFILER

NANOBASE is a market leader in high resolution optical microscopy solutions for scientific and industry applications.

The Xpert-IP is a non-contact and non-destructive thickness measurement system utilizing spectral interferometry. It uses Nanobase's optical interferometer-based technology to measure the absolute thickness of a variety of materials such as specialty plastic films, medical membranes, semiconductor coatings, and display panels. The Xpert-IP measures the thickness of a single layer or multiple layers to an accuracy of ±0.005 μm and with a repeatability of ±0.002 μm. In addition, the Xpert-IP offers straightforward operation, a rugged design, and affordability to satisfy the needs of both the R&D scientist and the manufacturing engineer.

FEATURES

- Absolute thickness is measured to an accuracy of ±0.2 % full range
- Exceptional ling-term measurement repeatability of ±0.003 % full range
- Broad measurement range of 10 μm to 1 mm
- Simplified measurement is added to the software
- Capable of both surface analysis
- Multiple layers measured simultaneously
- Rugged design for laboratory and manufacturing environments

昊量光电

APPLICATIONS

Semiconductor

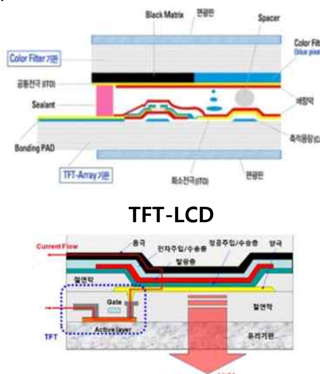
- ◆ **Wafer**
- ◆ **Si for PV panel**

Wafer coating

SiC Coat, Si Coat, Polished Si, Optical disk

Flat Panel Display

- ◆ **Panel**



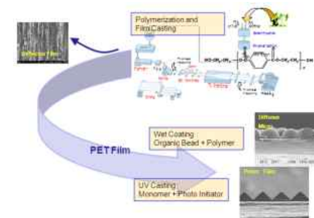
TFT-LCD

AM-OLED

Cell gap, Glass thickness, DLC, High-function film

Films & Polymers

- ◆ **Optical film**
- ◆ **Medical Polymer Materials**



Functional PET film

Artificial vessel **Catheter**

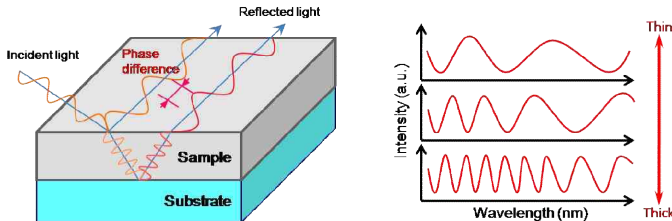
AR film, PET, Coating layer, Coating film, Evaporation film, Functionality film, Acrylic resin, Video head, etc.

Xper-IP

INTERFEROMETRIC PROFILER

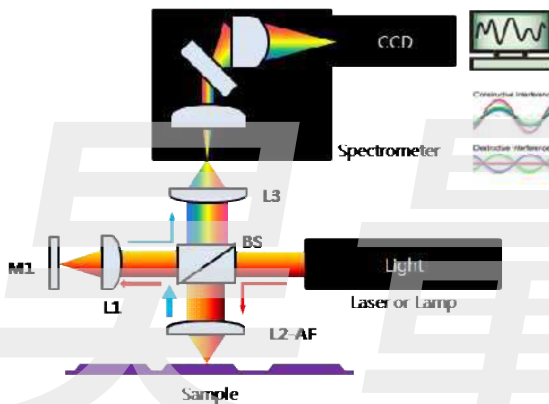
NANOBASE is a market leader in high resolution optical microscopy solutions for scientific and industry applications.

PRINCEPLES



When light enters a thin film sample, multiple reflections occur inside the thin film. Those multiple-reflection light waves boost or weaken each other along with their phase difference. The phase difference of each multiple-reflection light is determined by the light wavelength and optical path length (=distance that light moves back and forth in the thin film multiplied by the film refractive index).
This phase difference allows the spectrum reflected from or transmitted through the sample to produce a unique spectrum that depends on the film thickness. Spectral interferometry is a technique for measuring film thickness by analyzing that particular spectrum. The number of signals is increased as the film thickness becomes thick. The signal intervals in short wavelength range appears more often than those in the long wavelength range.

SCHEMATIC DESIGN

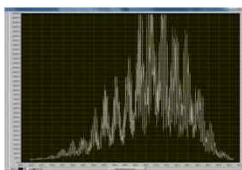


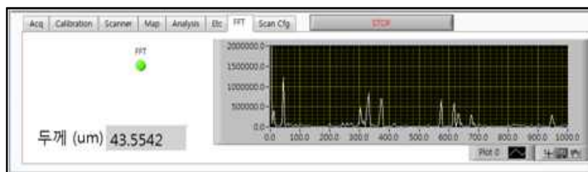
SPECIFICATIONS

Model	Xper-ITP (Interferometric Thickness Porfiler) Xper-ISP (Interferometric Surface Porfiler)
Measurable Range	100~1,000 µm or 200~2,000 µm or custom range *Inverse proportion to spectrometer Resolution (FWHM)
Measurement Accuracy	±0.2 % Full range
Measurement Reproducibility	Single shot : 0.01 % Full range (< 100 nm) Averaging : 0.003 % Full range (< 30 nm)
Measurement Speed	Laser: Standard 30 pps (Max speed 100,000 pps)
Light Source	Laser : SLD (840 nm)

EXAMPLE

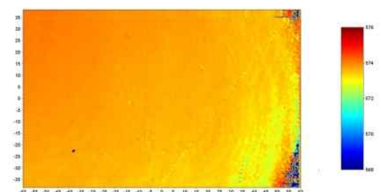
Interferometric Thickness Measurement


Interference fringes

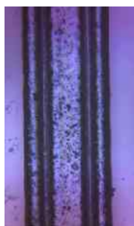


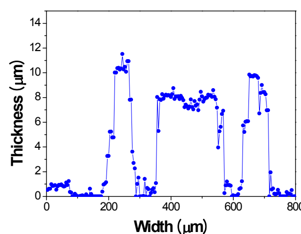
Thickness information by interference fringes

3D Surface Measurement



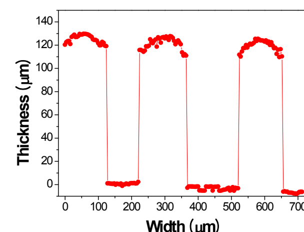
Interferometric Surface Measurement


Microscopic image



Surface information

Microscopic image



Surface information

NANOBASE

昊量光电