Optosky(Xiamen)Photonics Inc.
E-mail: support@optosky.com
Tel: +86-592-6102588
Web: www.optosky.net

Optical Film Thickness Gauge

SM200

Feature

- Non-contact, non-destructive testing system;
- Ultra-long life light source, higher luminous efficiency;
- High-resolution, high-sensitivity spectrometer, the measurement results are more accurate and reliable;
- The software interface is intuitive, and the operation is convenient and time-saving;
- Historical data storage to help users better grasp the results;
- Desktop distribution design, suitable for rich scenarios;
- Low maintenance cost and convenient maintenance;

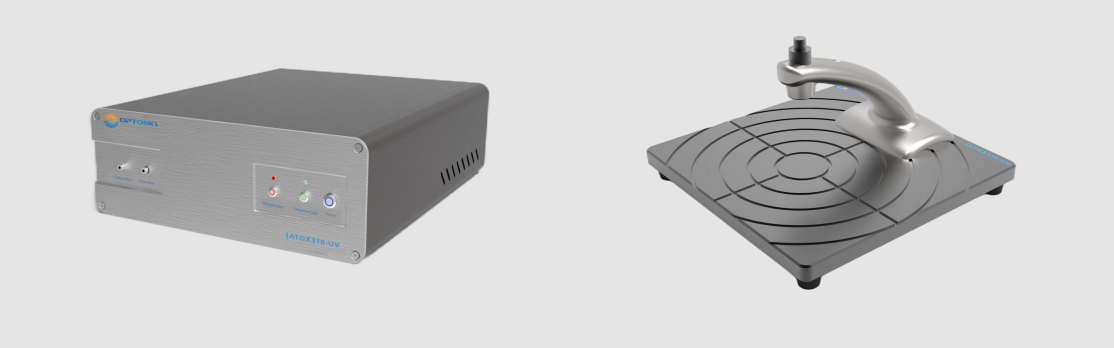
Description

SM200 is an automatic thin film thickness mapper developed by utilizing the principle of thin film reflected light interference. It uses the light with the widest wavelength range of 200-1700nm to vertically incident on the surface of the film. As long as the film has a certain degree of transmission, the SM200 can calculate the thickness of the film according to the reflected interference spectrum, as well as other optical constants such as reflectivity. , refractive index and extinction coefficient, etc., the thickness of the maximum mapping range can reach 1nm ~ 250um.

The SM200 automatic optical film thickness mapper is constructed by the surveying and mapping host, the surveying and mapping platform, the Y-type optical fiber and the host computer software. The leading generation of automated optical film thickness gauges.

Application

- Semiconductor coating: photoresist, oxide, desalination layer, silicon-on-insulator, wafer back grinding;
- Liquid crystal display: gap thickness, polyimide, ITO transparent conductive film;
- Optical coating: hard coating, anti-reflection layer;
- Microelectronic system: photoresist, silicon film, printed circuit board;
- Biomedical: medical equipment, Parylene

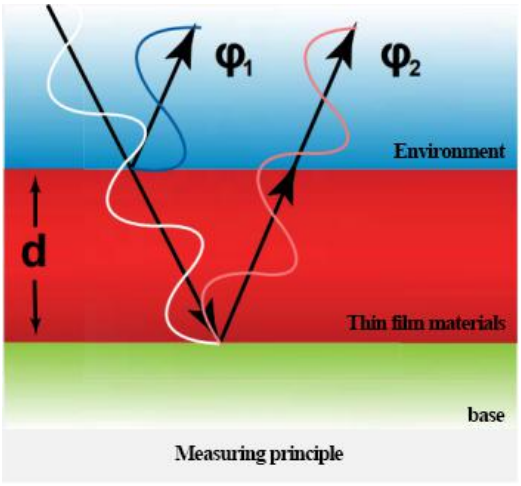


Optosky(Xiamen)Photonics Inc.
E-mail: support@optosky.com
Tel: +86-592-6102588
Web: www.optosky.net

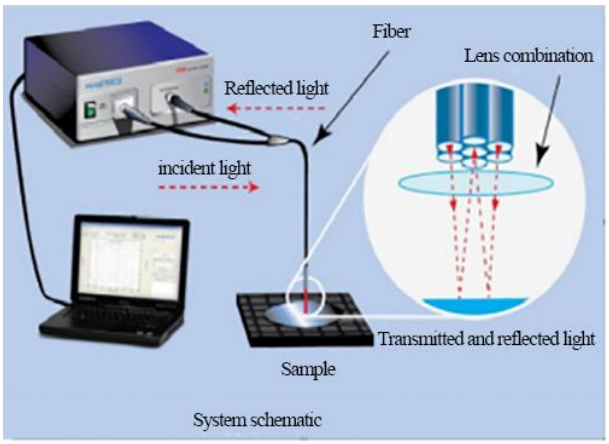
1. Work Principle

When the incident light penetrates the interface of different materials, part of the light will be reflected. Due to the fluctuation of light, the reflected light from multiple interfaces interferes with each other, so that the multi-wavelength spectrum of the reflected light oscillates. From the oscillation frequency of the spectrum, we can judge the distance of different interfaces and then obtain the thickness of the material (more oscillations represent a larger thickness), and other material properties such as refractive index and roughness can also be measured at the same time, as shown in the left figure below.

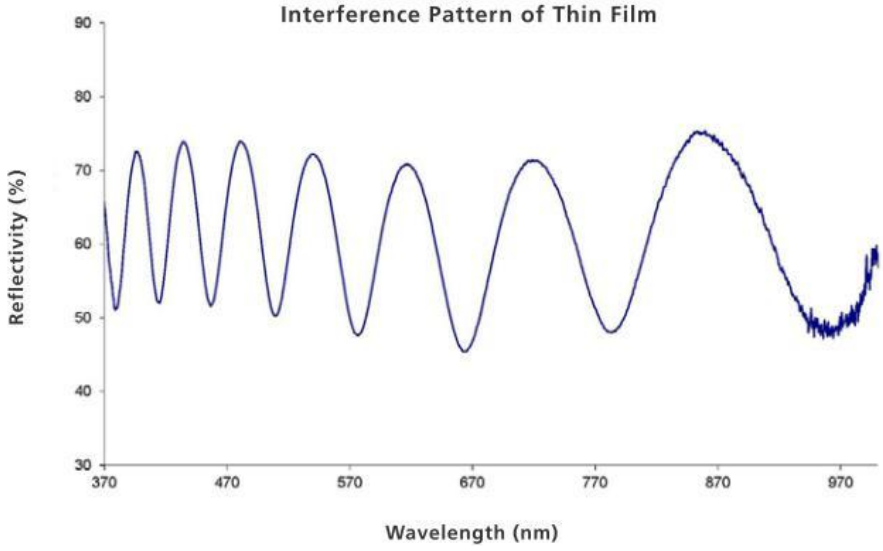
Optosky fully absorbed the pain points of the industry, dug deep into the needs of customers, and devoted itself to building the leading automatic film thickness measuring instrument in China - SM200, which emits light from the host light source and irradiates the surface of the sample to be measured through the Y-type optical fiber. The Y-type fiber is composed of 7 thin fibers to form a plum blossom, the outer 6 fibers emit light, and the middle fiber guides the reflected interference light back to the spectrometer inside the host for measurement and calculation. The principle of SM200 system is shown in the figure below right.



Measuring principle



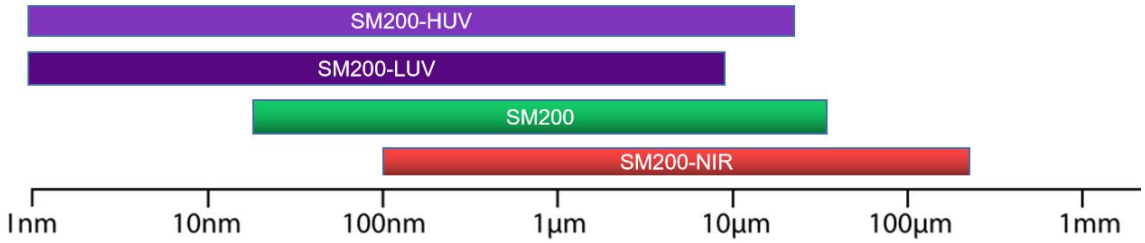
System schematic



Optosky(Xiamen)Photonics Inc.
E-mail: support@optosky.com
Tel: +86-592-6102588
Web: www.optosky.net

2. Parameters

SM200 Optical Film Thickness Gauge



Model	SM200-LUV	SM200-HUV	SM200	SM200-NIR
General specifications				
Spectral range	200nm-1000nm	200nm-1000nm	400nm-1000nm	900nm-1700nm
Light source	Deuterium halogen Lamp		Tungsten halogen lamp	
Measurement specifications				
Thickness range[1]	1nm-10um	1nm~30um	20nm-60um	100nm-250um
Accuracy[2]	±2nm 或 0.2%			±3nm 或 0.4%
Incidence angle	90°			
Film thickness layers	1~3			
Sample material	Transparent or translucent film			
Measurement mode	Single-point/multi-point/automated measurements			
Spot size[3]	2mm			
Sample size	Diameters from 1mm to 300mm or larger			
Basic requirements				
Operating system	Windows10/11			
Indicator light	Deuterium lamp indication, halogen lamp indication		Halogen lamp indication	
Button	Power buttons, deuterium lamps, halogen lamps		Power button, halogen power	
External interface	Power outlet, USB 2.0, RJ45			
Scanning platform	Rotate + X axis movement			
Movable stroke	150mm*360°			
Material	Aluminum alloy			
Power supply	100~240VAC，50~60Hz			
Packing list	Mainframe, measuring platform, power cord, communication cable, optical probe, Y-fiber			

Remarks:

1. Depends on the material;
2. The larger one is the larger and depends on the material;
3. Optional up to 20um;