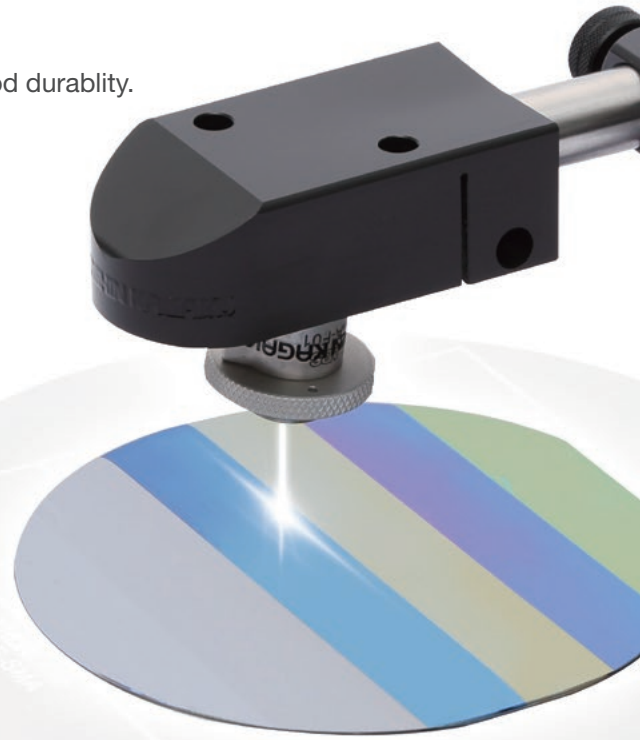
SHASHIN KAGAKU
PRODUCT COMPANY

Compact film thickness monitor

It corresponds to wide range of application for 10μm to 300μm film thickness

1 Compact probe with the optical fiber[*1]

can be installed in a small space inside the process tool.
Since the 30 mm probe is connected with a optical fiber, it has good durablity.



2 Good repeatability of the film thickness measurement 0.1nm(3σ)[*2]

3 Multilayer film thickness measurement up to 9 layers[*3]

4 Material analysis function[*4]

- Evaluation of mixing ratio of the composite material using EMA
- Crystallinity and Analysisy of the optical constants

5 Selectable light source[*5]

Light source	Wavelength range (nm)	Target thickness area (nm)	Typical life time (Hour)
White color LED	430~700	50~50,000	>50,000
Tungsten-Halogen	400~900	50~50,000	10,000
Deuterium-Halogen	220~900	10~30,000	1,000

6 Wireless (Option)[*6]

7 Film thickness end point detection software is included[*7]

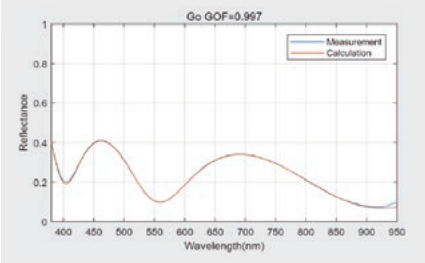
8 Automatic mapping stage (Option)[*8]

Note
[*1] It is recommended that the distance from the target surface to the probe is 1mm to 80mm. The measurement area is about 3mmΦ.
1mmΦ pinhole attachement is additionally prepared.
Larger probe is available for the long work distance .
[*2] The following environment is recommended.
0.1nm(3sigma) SiO2 on Si, Thickness range is 30nm to 1um
0.01%(3sigma) SiO2 on Si, Thickness range is over 1um
[*3] The maximum number of layer depends on the actual film structure and wavelength range.
[*4] Effective Medium Approximation (EMA) theory and dielectric function are available for material analysis. They become difficult in case of thin film like less than 100nm.
[*5] The best light source depends n the target film thickness and required accuracy.
[*6] Available on white LED light source. Power is supplied with Li-Ion battery. Data is communicated via Wi-Fi.
[*7] Spectral wavelength range depends on light and spectrometer.
[*8] It enables to manage up to 450mm wafer.
Recommended system requirements
Room temperature : 18 to 45 ℃
Long term: < ±2.0℃/24Hours
Short term: < ±1.0℃/1Hour
Humidity : 45±20% (Under no condensation)

Example of spectrum and short-term repeatability

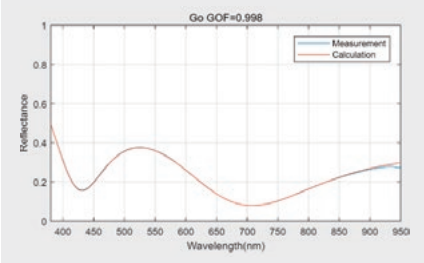
SiO_2 on Si single layered film (with Tungsten-Halogen lamp)

#1 SiO_2(477nm)→GOF=0.998



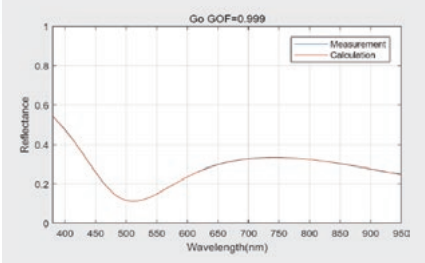
Repeatability : 0.0037nm (3σ)

#2 SiO_2(368nm)→GOF=0.998



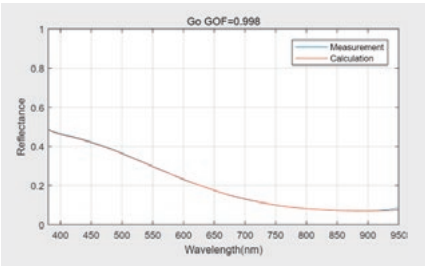
Repeatability : 0.0051nm (3σ)

#3 SiO_2(260nm)→GOF=0.999



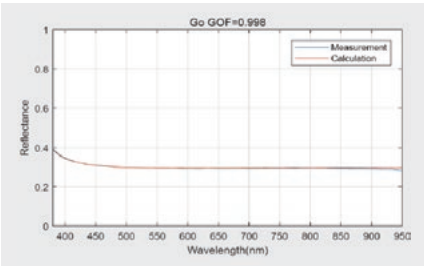
Repeatability : 0.0036nm (3σ)

#4 SiO_2(153nm)→GOF=0.998



Repeatability : 0.0037nm (3σ)

#5 SiO_2(37nm)→GOF=0.999

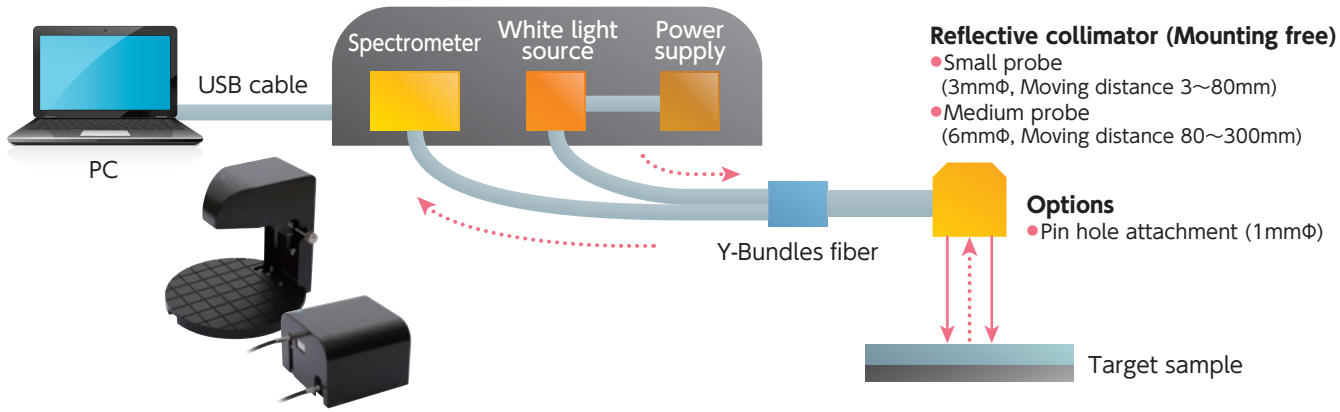


Repeatability : 0.0051nm (3σ)

Note: GOF stands for Goodness of Fit, which is a numerical representation of the fitness between the measured spectrum and the calculated spectrum.

Test condition	3 sigma when the test wafer is fixed for 30 times continuously
Measurement time	< 1 second
Warm up	1 hour
Room temperature	24.1 ± 0.2 degree

Configuration



Reflective collimator (Mounting free)
- Small probe (3mmΦ, Moving distance 3~80mm)
- Medium probe (6mmΦ, Moving distance 80~300mm)

Options
- Pin hole attachment (1mmΦ)

(Manufacturer)

Shashin Kagaku Co., Ltd.
Product Company

ISO 9001 BUREAU VERITAS Certification

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(Authrized Dealer)

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