



Coating and thin film thickness analyzer (TFM-100)

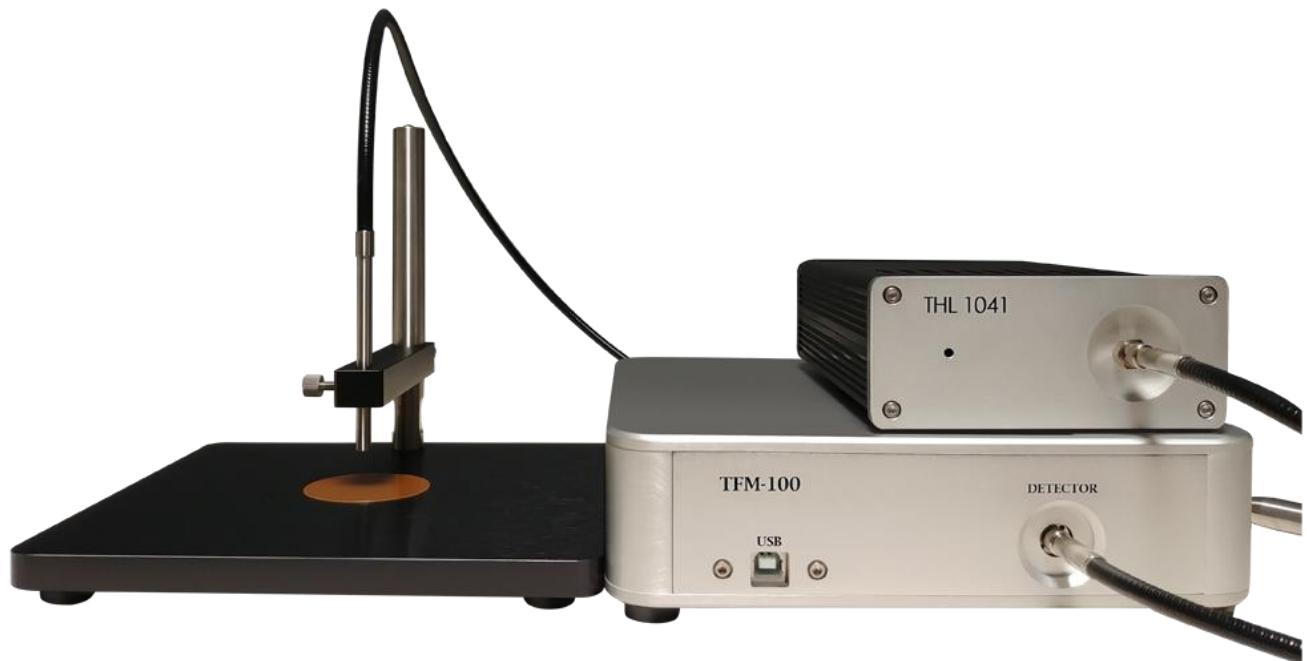
■ TFM-100 Series

TFM-100 Series is a non-contact coating and thin film thickness analyzer (Reflectometer). TFM has a user friendly interface which helps anybody can get results easily.

- *Non-contact and Non-destructive
- *Simple measurement with a few buttons
- *Various substrates (wafer, glass, metal, etc.)

■ Specifications at a glance

- *Measurement range: $0.5\ \mu\text{m}$ to $400\ \mu\text{m}$ (depending on film type)
- *Measurement spot size: Approximately 4 mm (Option: $40\ \mu\text{m}$, $80\ \mu\text{m}$)
- *Repeatability(10x): $\leq 0.001\ \mu\text{m}$ at $1\text{-}\mu\text{m}$ SiO₂ on Si Wafer
- *Stage size: 20 x 20 cm
- *Detector: 22 x 22 x 7 cm



■ Specifications

TFM-100

TFM-100N

Thickness range	0.5 μm – 100 μm	1 μm – 400 μm
Wavelength range	350 nm – 1,050 nm	750 nm – 1,100 nm
Spot size	Approximately 4 mm	
Repeatability	< $\pm$ 0.001 μm at 1 μm SiO ₂ on Si wafer	
Light source	Tungsten halogen 1–6 W	
Sample stage	20 cm x 20 cm	
Dimensions	Detector: 22 cm x 22 cm x 7 cm (H) Light source: 12 cm x 17 cm x 5 cm (H) Stage: 20 cm x 20 cm x 17 cm (pole H)	
Weight	Approximately 5 kg	
Power	12 V / 1 A	

■ Principle

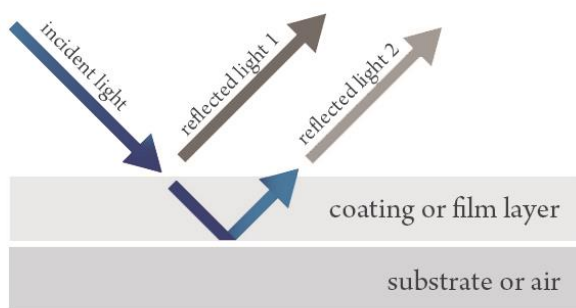


Fig 1. Principle 1

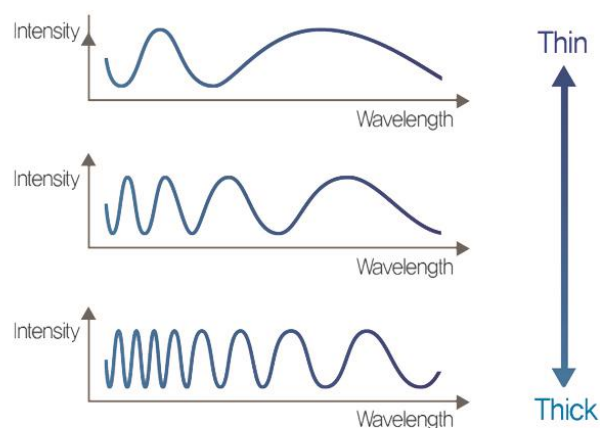


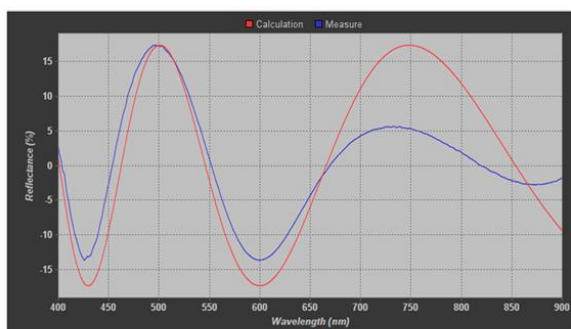
Fig. 2.

Principle 2

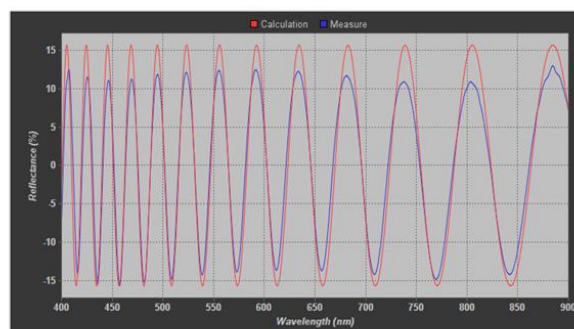
When the incident light directs light into the sample, some part of the light is reflected back from the film's surface (reflected light 1) and some part transmits the film and is reflected back from the substrate (reflected light 2) (Fig. 1).

There are interference phenomena between the two reflected lights as shown in Fig. 2. Fig. 2 indicates that the more the sine curves in the graph, the thicker the film.

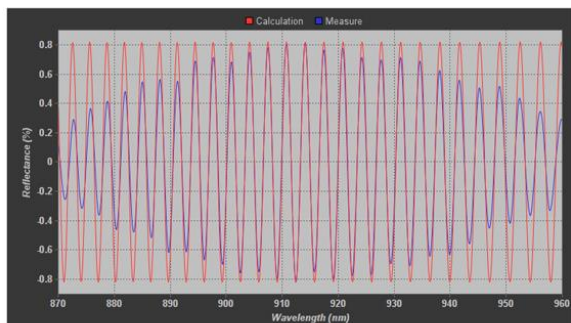
■ Thickness Results



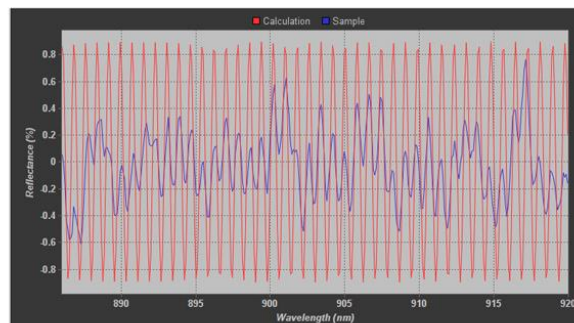
0.5 μm



3 μm



78 μm



343 μm

Fig. 3. Thickness results

No	Thickness
1	0.5124
2	0.5124
3	0.5124
4	0.5125
5	0.5124
6	0.5124
7	0.5124
8	0.5124
9	0.5124
10	0.5124

500 nm

No	Thickness
1	77.98
2	77.98
3	77.98
4	77.98
5	77.98
6	77.98
7	77.98
8	77.99
9	77.99
10	77.98

78 μm

Fig. 4. Repeatability (10 times)

■ Applications

- Semiconductor
- Display
- Conductive oxides
- Protective coatings
- PCB coating process
- Parylene coatings
- Hard coatings
- Lens coatings
- Bio medical applications
- Adhesive coatings
- Polymer films (ex. PET)
- Thick photo-resists (ex. SU-8)

