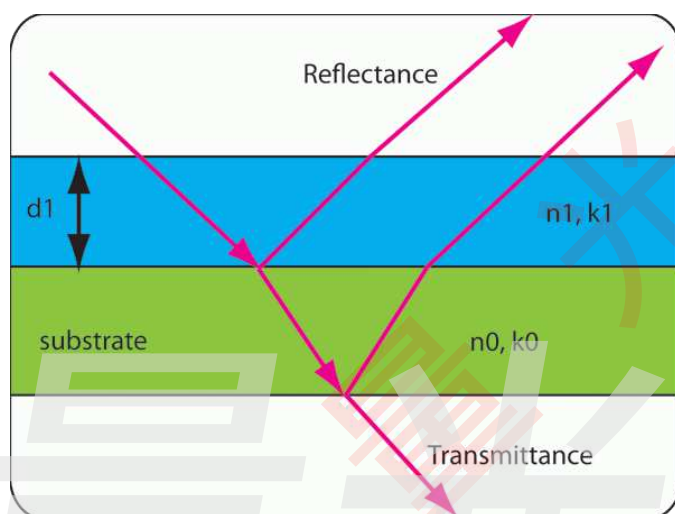
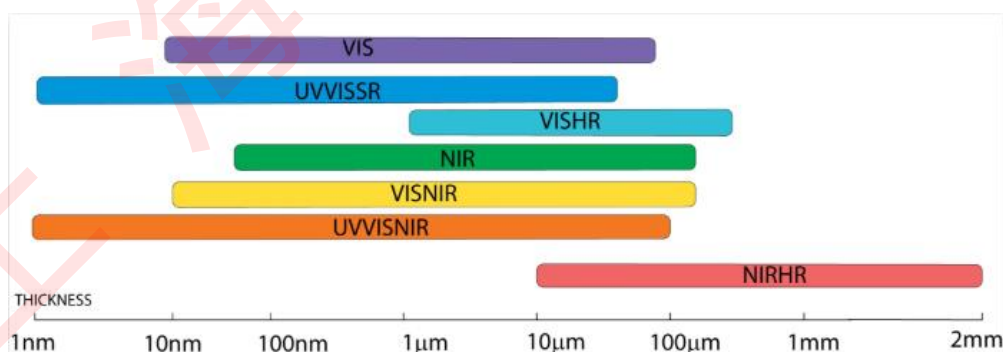


## 膜厚测量仪

当指定波长范围的光照射到薄膜上时，从不同界面上反射的光相位不同，从而引起干涉导致强度相长或相消。而这种强度的振荡是与薄膜的结构相关的。通过对这种振荡拟合和傅里叶变换就可获得样品厚度和相关的光学常数。



膜厚测量仪操作简单，只需一键操作即可获得样品的厚度和折射率，膜厚测量设备可支持不同光谱范围，光谱范围可达 200-1700nm，测量厚度范围从 1nm 到 1.8mm，重复精度可达 0.01nm。



主要可分为以下几种产品：

### 1) 单点膜厚测量设备

单点膜厚测量设备包含以下几款产品：

①AU-MPROBE-20 是一款台式膜厚测量设备, 该设备操作简单, 只需一键就可获得样品的厚度和折射率, 并且可提供不同波段范围的产品。该膜厚测量仪拥有以下几种型号, 客户可根据自己所需的波长范围和薄膜厚度进行选择。



可供选择型号:

Model	Wavelength range	Spectrometer/Detector/Light source	Thickness range*
<b>VIS</b>	400-1100 nm	Spectrometer F4/Si 3600 pixels/ Tungsten - Halogen light source	10 nm to 75 $\mu\text{m}$
<b>UVVisSR</b>	200-1000 nm	Spectrometer F4/ Si CCD 2048 pixels/ Deuterium & Tungsten-Halogen light source	1 nm to 75 $\mu\text{m}$ (option: up to 150 $\mu\text{m}$ )
<b>VISHR</b>	700-1100 nm	HR Spectrometer F4/Si 2048 pixels/ Tungsten - Halogen light source	1 $\mu\text{m}$ to 400 $\mu\text{m}$
<b>NIR</b>	900-1700nm	NIR F4/512 InGaAs PDA/Tungsten-Halogen light source	50 nm-100 $\mu\text{m}$
<b>VISNIR</b>	400-1700 nm	Spectrometer F4 Si CCD 3600 pixels(Vis channel);NIR F4/512 InGaAs PDA( NIR channel) Tungsten-Halogen light source	10 nm to 100 $\mu\text{m}$
<b>UVVIS-NIR</b>	200 -1700 nm	Spectrometer F4 Si CCD 2048 pixels(UVVis channel);NIR F4/512 In-GaAs PDA( NIR channel) Deuterium & Tungsten-Halogen light source	1 nm -100 $\mu\text{m}$
<b>VisLX</b>	400-1100 nm	F4/Si 2048 pixels, Tungsten Halogen light source. High frequency measurement version of MProbe Vis system (LAN interface, 10 $\mu\text{s}$ integration time )	10 nm- 70 $\mu\text{m}$
<b>NIRHR</b>	1500-1550 nm	NIR F4/512 InGaAs PDA/Tungsten-Halogen light source or SLD (super-luminescent diode)	10 $\mu\text{m}$ -1800 $\mu\text{m}$ (quartz) 4 $\mu\text{m}$ -500 $\mu\text{m}$ ( Si )

②AU-MPROBE HC 是基于 MPROBE-20 平台开发专用于测量曲面和大型零件上的涂层, 并且用手动探针代替样品台。

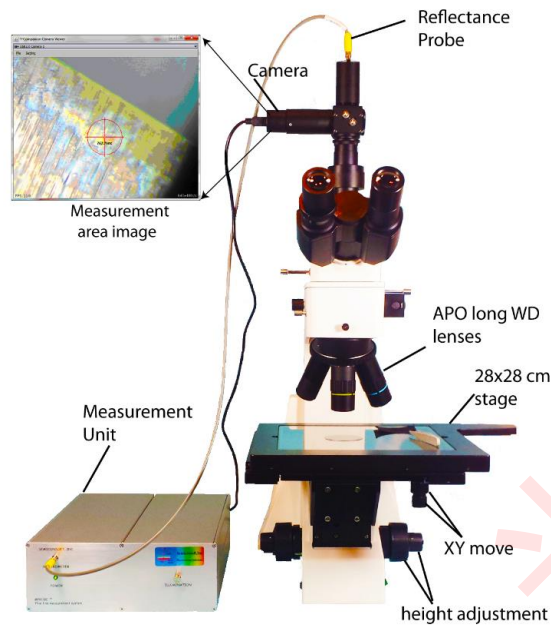


设备主要参数:

Spectral range (nm)	400-1000
Spectrometer/detector	F4 spectrometer, 3600 pixels Si CCD, 16 bit ADC, 380-1100 nm range
Spectral resolution	<1 nm FWHM
Light source	5 W Tungsten-halogen lamp (Xe filled), CT 2800° Lifetime: 10000 hrs
Reflectance probe	Fiberoptics (7 fibers assembly), 400µm fiber core
Precision	<0.01 nm or 0.01%
Accuracy	<1nm or 0.2%
Weight (main unit)	5 kg
Size (main unit)	8"x 12" x 4" (WxDxH)
Power	100-250VAC, 50/60 Hz 20W

## 2) 聚焦光斑膜厚测量仪

AUMPROBE 40 是一款聚焦的小光斑膜厚测量系统，该产品将显微系统和膜厚测量设备结合起来，用于对膜厚的微区测量，光斑最小可达 2µm。该设备集成相机和软件，可精确显示待测位置，并同时显示测量结果。



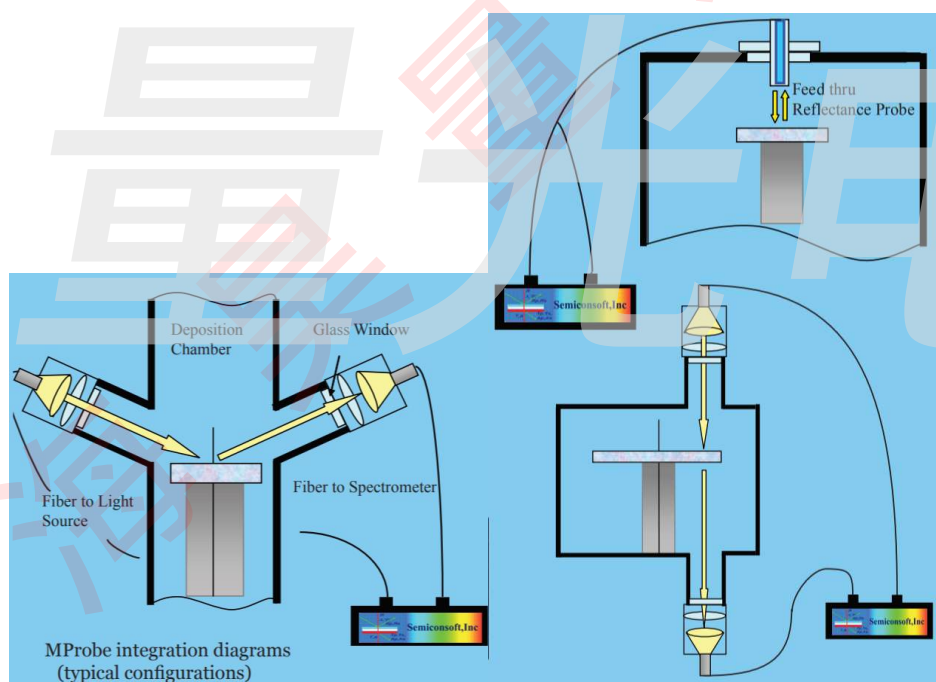
该设备有不同波长范围可选，可供选择的产品型号如下：

Model	Wavelength range	Spectrometer/Detector/Light source	Thickness range*
<b>VIS-MSP</b>	400-1000 nm	Spectrometer F4/Si 3600 pixels/ Tungsten - Halogen light source	10 nm to 75 $\mu$ m
<b>UVVisSR-MSP</b>	200-1000 nm	Spectrometer F4/ Si CCD 2048 pixels/ Deuterium & Tungsten-Halogen source	1 nm to 75 $\mu$ m
<b>UVVisF-MSP</b>	200 - 900nm	Spectrometer F4/ Si CCD 2048 pixels 20W Xe flush lamp	1 nm - 5 $\mu$ m
<b>VISHR-MSP</b>	700-1100 nm	HR Spectrometer F4/Si 2048 pixels/ Tungsten - Halogen light source	1 $\mu$ m to 400 $\mu$ m
<b>NIR-MSP</b>	900-1700nm	Spectrometer F4/512 pixels InGaAs/Tungsten-Halogen light source	50 nm to 85 $\mu$ m
<b>VISNIR-MSP</b>	400-1700 nm	Spectrometer F4 Si CCD 3600 pixels(Vis channel);Spectrometer F4/512 InGaAs PDA( NIR channel) Tungsten-Halogen light source	10 nm to 85 $\mu$ m
<b>UVVISNIR-MSP</b>	200 -1700 nm	Spectrometer F4 Si CCD 2048 pixels(UVVis channel);Spectrometer F4/512 InGaA ( NIR channel) Deuterium & Tungsten-Halogen light source	1 nm - 85 $\mu$ m
<b>NIRHR-MSP</b>	1500-1550nm	Spectrometer F4/512 pixels InGaAs/ 20W SLD light source +50W TH lamp	10 $\mu$ m-1800 $\mu$ m(quartz) 4 $\mu$ m -500 $\mu$ m( Si )

### 3) 支持原位的膜厚测量设备

AUMPROBE 50 INSITU 是一款支持原位测量膜厚测量仪，该设备采用门控数据采集方式因此可以在高环境光的条件下工作。此外该型号膜厚测量仪支持定

制以满足不同形状的真空腔。根据可用的光学窗口，支持斜入射和垂直入射。光线可以聚焦样品表面或准直,探测探头可以放置在沉积室光学端口内部或外部，由于该膜厚测量仪没有移动部件，通常测量时间约 10ms，



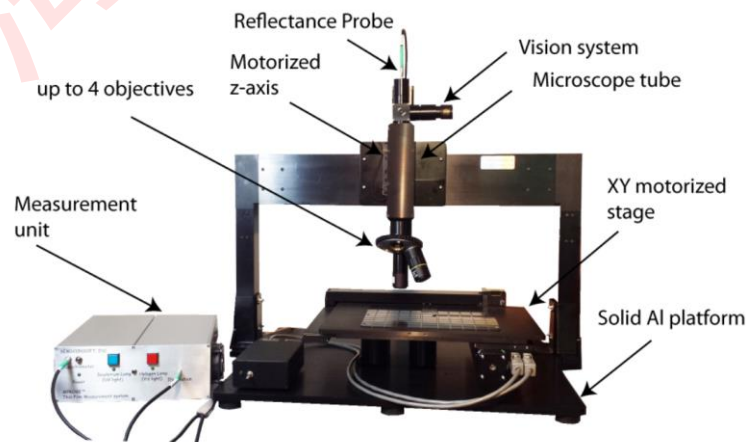
此外该型号还有多种波段范围可选，可供选择型号如下：



Model	Wavelength range	Spectrometer/Detector/Light source	Thickness range*
<b>VIS</b>	400-1100 nm	Spectrometer F4/Si 3600 pixels/ Tungsten - Halogen light source	15 nm to 20 $\mu\text{m}$ (option: up to 50 $\mu\text{m}$ )
<b>UVVisF</b>	200-900 nm	Spectrometer F4/ Si CCD 3600 pixels/ Flash Xe light source	1 nm to 20 $\mu\text{m}$ (option: up to 50 $\mu\text{m}$ )
<b>HRVIS</b>	700-1000 nm	HR Spectrometer F4/Si 3600 pixels/ Tungsten - Halogen light source	1 $\mu\text{m}$ to 400 $\mu\text{m}$
<b>NIR</b>	900-1700nm	Transmission Spectrometer (TVG) F2/512 InGaAs/Tungsten-Halogen light source	100 nm-200 $\mu\text{m}$
<b>VISNIR</b>	400-1700 nm	Spectrometer F4 Si CCD 3600 pixels(Vis channel);Transmission Spectrometer (TVG)F2/512 InGaAs PDA (NIR channel) Tungsten-Halogen light source	15 nm to 200 $\mu\text{m}$
<b>UVVIS-NIR</b>	200 -1700 nm	Spectrometer F4 Si CCD 3600 pixels(Vis channel);Transmission (TVG) F2/512 InGaA (NIR channel) Deuterium & Tungsten-Halogen light source	1 nm -200 $\mu\text{m}$
<b>XT</b>	1590nm -1650nm	Transmission Spectrometer (TVG) F2/512 InGaAs/Tungsten-Halogen light source	10 $\mu\text{m}$ - 1 mm

#### 4) 支持 Mapping 的聚焦膜厚测量仪

AUMPROBE 60 是一款聚焦并可做 mapping 的膜厚测量设备，重复精度可达 0.01nm，精度可达 1nm，mapping 面积最大支持 300\*300mm。并支持多种波长范围可选。

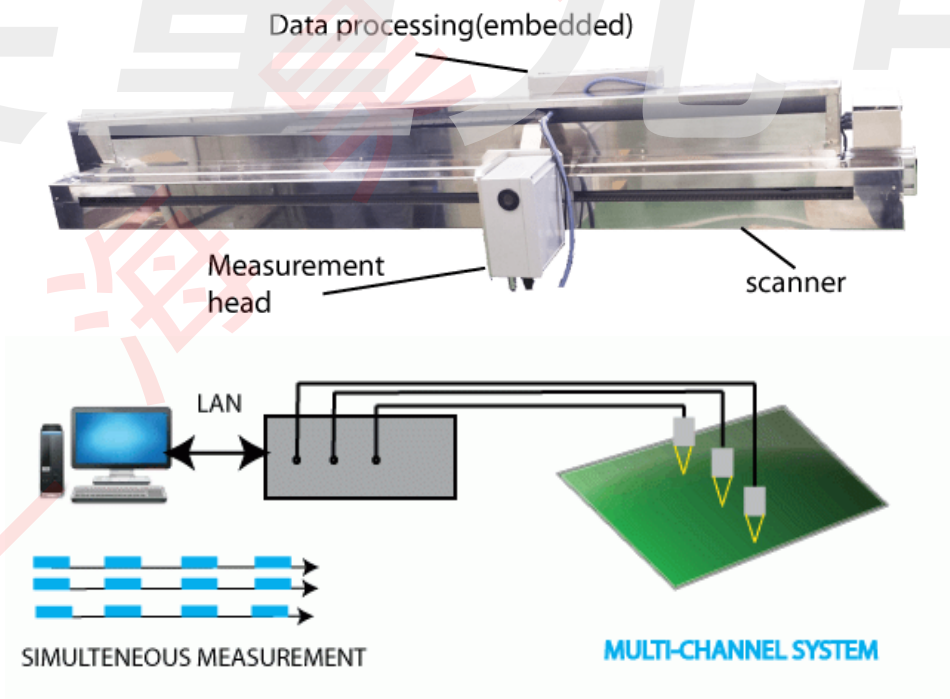


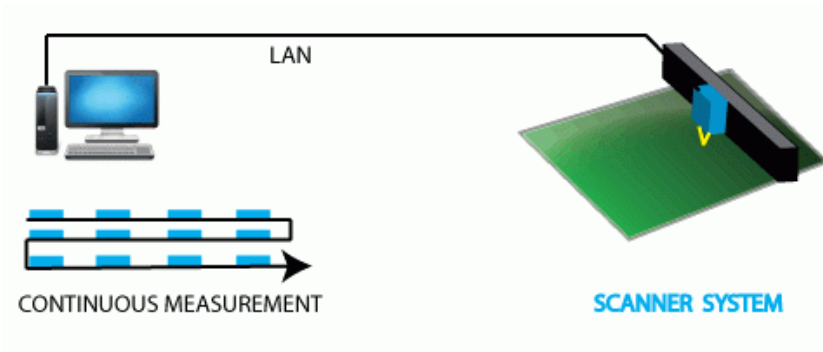
可选波长型号：

Model	Wavelength range	Spectrometer/Detector/Light source	Thickness range
<b>VISLX</b>	400-1000 nm	Spectrometer F4/Si 2048 pixels/ TH light source	10 nm to 75 $\mu\text{m}$ Prec. <0.01nm or 0.01%
<b>UVVisSR</b>	200-1000 nm	Spectrometer F4/ Si CCD 2048 pixels/ De & TH light source	1 nm to 75 $\mu\text{m}$ Prec. <0.01nm or 0.01%
<b>UVVisF</b>	200 - 900nm	Spectrometer F4/ Si CCD 2048 pixels Xe flush lamp	1 nm - 5 $\mu\text{m}$ Prec. <0.1nm or 0.01%
<b>VISHR</b>	700-1100 nm	HR Spectrometer F4/Si 2048 pixels/ Tungsten - Halogen light source	1 $\mu\text{m}$ to 400 $\mu\text{m}$ Prec. <0.1nm or 0.01%
<b>NIR</b>	900-1700nm	Spectrometer F4/512 pixels InGaAs/TH light source	50 nm to 100 $\mu\text{m}$ Prec. <0.1nm or 0.01%
<b>VISNIR</b>	400-1700 nm	Spectrometer F4 Si CCD 3600 pixels(Vis channel);Spectrometer F4/512 InGaAs PDA( NIR channel) TH light source	10 nm to 100 $\mu\text{m}$ Prec. <0.01nm or 0.01%
<b>UVVISNIR</b>	200 -1700 nm	Spectrometer F4 Si CCD 2048 pixels(UVVis channel);Spectrometer F4/512 InGaA (NIR channel), De & TH light source (optional high-intensity Xe short arc source for fast measurement)	1 nm - 100 $\mu\text{m}$ Prec. <0.01nm or 0.01%
<b>NIRHR</b>	1530-1580nm	Spectrometer F4/512 pixels InGaAs/ SLD light source +optional 50W TH lamp for illumination	25 $\mu\text{m}$ -2000 $\mu\text{m}$ (quartz) 10 $\mu\text{m}$ -1000 $\mu\text{m}$ ( Si ) Prec. <10nm

### 5) 在线膜厚测量设备

AUMProbe 70 是一款高性能膜厚测量仪，主要设计用于 24/7 生产线上的连续测量。该设备主要有两种配置一个是在产线上配备多个固定的探头，第二种是将探头装在扫描仪上扫描。





昊量光电

上海