

# The World Leader in Analytical X-ray Metrology Tools and Solutions for the Semiconductor Industry

## In-line X-ray Metal Film Monitor: MFM 310



**High throughput and precision measurements on blanket and product wafers**

- Micro-XRR\*  
Thickness · Density · Roughness
- Micro-XRF\*  
Thickness · Composition
- Micro-XRD\*  
Crystallinity · Orientation

\*XRR: X-ray Reflectivity, XRF: X-ray Fluorescent, XRD: X-ray Diffraction

### Applications

**FEOL** : SiGe, CoSix, NiSix, SOI, Al, SiON, Hi-k dielectric/ Metal Gate ...

**BEOL** : Cu seed, Cu barrier, Cu plating, Ti/TiN, Ta/TaN, W ...

**Others** : MgO, CoFeB, Ru, Pt, PZT ...

### Micro X-ray beam module **COLORS™**

Up to 3 COLORS modules can be installed in one tool.  
The incident angle can be set suitable for the film thickness

		FWHM( $\mu\text{m}$ )	XRF	XRR	XRD
	COLORS Cu	85	○	○	○
	COLORS Au	85	○	—	—
	COLORS Mo	85	○	—	—
	COLORS Rh	85	○	—	—
	COLORS-n Cu	50	○	—	—
	COLORS-i Au	35	○	—	—
	COLORS-i Mo	35	○	—	—

Right) COLORS Cu  
Left) COLORS-i Mo

