



CHARACTERIZATION
IMAGING
MEASUREMENT

• *Your Trusted Partner*

2020
PRICING
GUIDE

Characterization Services

APPLICATION	TECHNIQUE	INSTRUMENT	PRICING STARTS @
Crystallinity, composition and residual stress: Thin films, bulk & other low texture materials	XRD: Qual. Phase ID	Rigaku Smartlab	\$380 / sample
	XRD: Crystallinity, Crystallite Size OR Texture Analysis	Rigaku Smartlab	\$380 ¹ / sample
	- 2 of 3 above	Rigaku Smartlab	\$600 ¹ / sample
	- All 3 above	Rigaku Smartlab	\$800 ¹ / sample
	XRD: Quant. Phase ID	Rigaku Smartlab	\$600 / sample
	XRD: Residual Stress	Rigaku Smartlab	\$380 / sample
Orientation, composition, quality and residual stress: Epitaxial films, single crystals & other high texture materials	XRD: Pole Figures	Rigaku Smartlab	\$400 / sample
	XRD: Offcut	Rigaku Smartlab	\$400 / sample
	XRD: Residual Stress XRD: Rocking Curves,	Rigaku Smartlab	\$600 ² / sample
	Quality (per plane)	Rigaku Smartlab	\$500 ² / sample
	XRD: Rocking Curves, Composition & Thickness (per plane)	Rigaku Smartlab	\$700 ² / sample
Thickness, density, interfacial roughness	XRR	Rigaku Smartlab	\$500 / sample
Optical constants, thickness	Spectral Ellipsometry, Mapping, 10-point	Woollam VASE 2000 DI	\$250 / sample
	Spectral Ellipsometry, Variable Angle, Single-point	Woollam VASE 2000 DI	\$125 / sample
Optical transmission, reflection	UV-VIS-NIR Spectrophotometry	Perkin Elmer 1050	\$125 / sample ³

¹ If given accurate qualitative phase ID ² If given crystallographic orientation ³ Plus setup charge and job minimum

Characterization Services

APPLICATION	TECHNIQUE	INSTRUMENT	PRICING STARTS @
Surface Topography / Roughness Critical Dimension Analysis Step Heights / Thicknesses	Laser Confocal	Keyence VK-X1100	\$300 / hour
	White Light Interferometry	Zygo ZeGage Plus	\$225 / hour
	Wide-area 3D measurement	Keyence VR-3200 Keyence VR-5200	\$225 / hour \$275 / hour
	Advanced Optical Microscopy	Keyence VHX-S660E	\$225 / hour
	AFM / SPM: Roughness/ Topography	Bruker Dimension Icon/ FastScan	\$175 / image ⁴
	AFM: Advanced Modes (KPFM)	Bruker Dimension Icon/ FastScan	\$475 / hour
	μ-CT	Rigaku CT Lab HX130	Please contact us
	Chromatic Dispersion Profilometry	FRT	\$360 / hour
	SEM	Hitachi 4700	\$225 / hour
	HR-SEM	Thermo Fisher G5 FEI Scios DB (magnetic sample)	\$375 / hour
	Large Area SEM (up to 15")	FEI Expida 1265	\$325 / hour
	Environmental SEM (temp cont, CL)	FEI Quanta ESEM	\$325 / hour
Cross sectional analysis: Structure, thicknesses, interfaces, composition	SEM + EDX/EDS	Hitachi 4700 w/ EDAX 70mm Octane Elect Si Drift Detector	\$275 / hour
	FIB-HR-SEM	Thermo Fisher G5 FEI Scios DB (magnetic sample)	\$375 / hour
	FIB-HR-SEM + EDX/EDS		\$400 / hour
	TEM (include sample prep)	Thermo Fisher Talos FEI Tecnai	\$850 / sample
	TEM + EDX/EDS		\$1250 / sample
TEM + EELS	\$1500 / sample ⁵		

⁴ Minimum 3 images at this price plus \$150 setup fee

⁵ Valence oxidation state requires special setup. Please call for quote

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Hardness, adhesion, coefficient of friction, stress	Nano-Indent	Bruker Hysitron TI Prem	\$300 / sample
	Scratch		\$450 / sample
	Wear-box		\$700 / sample
Particle size/ location	Particle Counter (SP1)	SurfScan SP1	\$225 / wafer
	Particle Counter (SP3)	SurfScan SP3	\$400 / wafer
Particle size distribution	Dynamic Light Scattering (DLS)	Litesizer 500	\$325 / sample
	Particle Size Analysis (PSA)	PSA 1190LD	\$150 / sample [#]
Rheology	Viscosity & Rheological Properties	Rheometer MCR 302	\$350 / hour
Zeta Potential	Colloidal Dispersion	Litesizer 500	\$300 / sample [#]
	Solid Surface	SurPASS 3	\$300 / sample [#]
Polymer Analysis	TGA	TA Instruments Q600 or equivalent	\$300 / sample
	DSC	TA Instrument DSC-2920	\$300 / sample
	TMA	TA Instrument Q400	Please contact us
	DMA	TA Instrument Q800	Please contact us
	FTIR Microscope (Ge/Diamond-C Crystal)	Thermo Fisher Nicolet 6700	\$225 / sample
	TGA-FTIR	Perkin Elmer, TA Inst.	\$600 / sample
	Pyrolysis FTIR	Perkin Elmer, CDS pyrolyzer	\$250 / sample

[#] Waste disposal fee may apply.

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APPLICATION	TECHNIQUE	INSTRUMENT	PRICING STARTS @
Surface & Bulk Compositional Analysis	XPS	Survey	\$365 / sample ⁶
		Survey Hi Res	\$730 / sample ⁶
		Depth Profile	\$1095 / sample
		Mapping	\$1460 / sample
		ISS	\$365 / sample
		UPS (Valence Band)	Please contact us
	UPS (Band Gap Measurement)	Please contact us	
TOF-SIMS		ION-TOF Model IV PHI	Please contact us \$800 / hour
EPMA	Basic	Cameca SX100	\$325 / sample
	Complete data		\$650 / sample
Auger	Higher-end scanning	Custom	\$335 / hour
		PHI 710	\$650 / hour
WDXRF	Survey scan	Rigaku AZX400	\$400 / hour ⁷
	Quantification		
Elemental & Chemical Analysis	NMR: Liquid	Bruker Avance III-HD 500 MHz NMR & Others	\$80 / sample
	NMR: Solid	Bruker Avance III-HD 600 MHz NMR Spectrometer	\$700 / sample
	FTIR	Nicolet 6700 and others	\$225 / sample
	ATR-FTIR	Perkin Elmer Optima	\$175 / sample
	ICPMS / ICP-OES		\$350 / prep \$450 / sample
	LA-ICPMS	Contact us	\$700 / sample
	GD-MS	Contact us	\$600 / sample
	Pyrolysis & Thermal Desorption GCMS	Agilent 7890GC with 5975 MS	\$390 / sample

⁶ Pricing depends on job complexity. Please call for quote ⁷ Plus setup fee and job minimum. Please call for quote.

PCBA, Cross-Sectioning, Metallography

APPLICATION	TECHNIQUE / TASK	PRICING STARTS @
Cross-Sectioning	Standard Plastic Components	\$350 each
	Ten or more Samples	\$300 each
	Ceramic Components	\$400-450 each
	Large Components	\$400-450 each
	Samples requiring encapsulation prior to cutting (Double Encapsulation)	\$400 each
	Additional slices, same mount	\$275 / slice
Dye & Pry Testing (w/ Images & report)	Sample prep and pull	\$350 / sample
	2 or more from same board	\$300 each
Light microscopy: Compound & Stereo-zoom	Image capture, linear & area measurements: including report prep	\$175 / hour
Metrology & Microscopy Services	Transmission X-Ray (HR): Inspection & Imaging	\$300 / hour
	3D Non-Contact Video Measurement 2 hour min.	\$175 / hour
	FULL-SUITE of metrology services available in core labs	By technique

PCBA, Cross-Sectioning, Metallography

APPLICATION	TECHNIQUE / TASK	PRICING STARTS @
Board Cleanliness Testing	Ion Chromatography (IC) Analysis <ul style="list-style-type: none"> - C3 Localized Extraction - Full Board Extraction 	Please contact us Please contact us Please contact us
	De-cap Plastic Components (Expose Die and Wire Bonds) AMI - Acoustic Imaging (De-lamination, Void Detection, etc) 4-Point Probe Strain Gauge Testing	Please contact us
		Please contact us
Please contact us		
Please contact us		
Engineering Services & Consulting	Advanced Analysis and Interpretation	\$150 / hour
	On-site Training for Laboratory Techniques	Please contact us
	On-site Training for IPC Certification	Please contact us
	Laboratory Start-up or Expansion	Please contact us