



CHARACTERIZATION
IMAGING
MEASUREMENT

• *Your Trusted Partner*

2020
PRICING
GUIDE

Characterization Services

Prices reflect base rates for standard measurements; with \$500 minimum / job.
Contact us to see how you can save with our bulk discounts and subscription analytical service options.

APPLICATION	TECHNIQUE	INSTRUMENT	STARTING PRICE
Crystallinity, Composition, and Residual Stress: Thin films, Bulk, and Other Low-texture Materials	XRD: Qual. Phase ID	Rigaku Smartlab	\$380 / sample
	XRD: Crystallinity, Crystallite Size, OR Texture Analysis		\$380 ¹ / sample
	- 2 of 3 above		\$600 ¹ / sample
	- All 3 above		\$800 ¹ / sample
	XRD: Quant. Phase ID		\$600 / sample
	XRD: Residual Stress		\$380 / sample
Orientation, Composition, Quality, and Residual Stress: Epitaxial Films, Single Crystals, and Other High-texture Materials	XRD: Pole Figures	Rigaku Smartlab	\$400 / sample
	XRD: Offcut		\$400 / sample
	XRD: Residual Stress + XRD: Rocking Curves		\$600 ² / sample
	Quality (per plane)		\$500 ² / sample
	XRD: Rocking Curves, Composition AND Thickness (per plane)		\$700 ² / sample
Thickness, Density, and Interfacial Roughness	XRR	Rigaku Smartlab	\$500 / sample
Optical Constants, Thickness	Spectral Ellipsometry: Mapping, 10-Point	J.A. Woollam VASE 2000 DI	\$250 / sample
	Spectral Ellipsometry: Variable Angle, Single-Point		\$125 / sample
Optical Transmission, Reflection	UV-VIS-NIR Spectrophotometry	Perkin Elmer Lambda 1050	\$125 / sample ³

¹ If given accurate qualitative phase ID ² If given crystallographic orientation ³ Plus \$150 set-up fee / class and job minimum

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Surface Topography / Roughness	Laser Confocal Microscopy	Keyence VK-X1100	\$300 / hour
	White Light Interferometry	Zygo ZeGage Plus	\$225 / hour
	Wide-Area 3D Patterned Light Measurement	Keyence VR-3200	\$225 / hour
		Keyence VR-5200	\$275 / hour
	Advanced Optical Microscopy	Keyence VHX-S660E	\$225 / hour
	AFM / SPM: Roughness / Topography	Anton Paar Tosca	\$175 / image ⁴
		Asylum Research Jupiter XR Bruker Dimension (Icon / FastScan Heads)	
Step Height / Layer Thicknesses	AFM: Advanced Modes (KPFM, MFM, PFM, etc)	Bruker Dimension (Icon / FastScan Heads)	\$475 / hour
	Micro-CT	Rigaku CT Lab HX130	\$400 / hour
	Chromatic Dispersion Profilometry	Microprof FRT 200	\$360 / hour
Electron Microscopy Cross-Sectional / Planar Imaging Analysis: Structure, Thicknesses, Interfaces, Composition	SEM	Hitachi 4700	\$225 / hour
	HR-SEM	Thermo Scientific Helios 5	\$375 / hour
		Thermo Scientific Scios (magnetic samples)	
		Add EDX / EDS	Any
	Add Focused Ion Beam (FIB)	Helios 5 / Scios only	+ \$50 / hour
	Add both EDX/EDS + FIB	Heliso 5 / Scios only	+ \$75 / hour
	Large Area SEM (up to 15 in)	FEI Expida 1265	\$325 / hour
	Environmental SEM (temp 25 to 1100 C, CL)	FEI Quanta 200 ESEM	\$325 / hour
	TEM (includes sample prep)	Thermo Scientific Talos FEI Tecnai Spirit G2	\$850 / sample
	Add EDX / EDS		\$1250 / sample
Add 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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APPLICATION	TECHNIQUE	INSTRUMENT	STARTING PRICE
Nanomechanical Analysis Hardness, Adhesion, Coefficient of Friction, Stress	Nano-Indent (> 100 nm thick) [#]	Bruker Hysitron TI Premier	\$300 / sample
	(< 100 nm thick) [#]		\$450 / sample
	Nano-Scratch (> 100 nm thick) [#]		\$450 / sample
	(< 100 nm thick) [#]		\$675 / sample
	Nano-Wear (> 100 nm thick) [#]		\$700 / sample
	(< 100 nm thick) [#]		\$1050 / sample
Particle Size / Location	Particle Counter (SP1)	KLA Tencor SurfScan SP1	\$225 / sample
	Particle Counter (SP3)	KLA Tencor SurfScan SP3	\$400 / sample
Particle Size Distribution	Dynamic Light Scattering	Anton Paar Litesizer 500	\$350 / sample ⁷
	Particle Size Analysis	Anton Paar PSA 1190 LD	\$250 / sample
Rheometry / Rheology	Viscosity / Rheological Properties	Anton Paar MCR 302 Rheometer	\$350 / hour
Zeta Potential	Colloidal Dispersion	Anton Paar Litesizer 500	\$300 / sample ⁷
	Solid Surface (single pH value)	Anton Paar SurPASS 3	\$350 / sample ⁷
	Solid Surface (pH range: 9 - 3) ⁸	Anton Paar SurPASS 3	\$900 / sample ⁷
Polymer Analysis	TGA	TA Instruments SDT 600	\$300 / sample
	DSC	TA Instruments DSC-2920	\$300 / sample
Thermomechanical Property Testing: Tg, Tm, Cure Properties, Viscoelasticity, Elastic Modulus, Hardness, Thermal Stability	TMA	TA Instruments Q400	Please contact us.
	DMA	Anton Paar MCR 702	Please contact us.
	FTIR Microscopy	Perkin Elmer Optima	\$225 / sample
	TGA-FTIR	Perkin Elmer + TA Instruments	\$600 / sample
	Pyrolysis FTIR	Perkin Elmer, CDS Pyrolyzer	\$250 / sample

⁶ Thickness (in nm) of sample coating; Hysitron nanomechanical testing also requires \$300 method development fee.

⁷ Material costs, accessory fees, and waste disposal fee may apply. ⁸ Includes 3 zeta potential measurements taken at each pH value.

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APPLICATION	TECHNIQUE	INSTRUMENT	STARTING PRICE
Surface & Bulk Elemental Composition Analysis	XPS	Survey Scan	\$365 / sample ⁹
		Survey + High Res	\$730 / sample ⁹
		Depth Profile	\$1095 / sample
		Mapping	Thermo Scientific Nexsa or equivalent \$1460 / sample
		ISS	\$365 / sample
		UPS: Valence Band	Please contact us.
	TOF-SIMS	UPS: Work Function	Please contact us.
			ION-TOF Model IV Please contact us.
	EPMA		PHI TOF-SIMS \$800 / hour
		Basic	CAMECA SX100 EPMA \$325 / sample
Auger	Advanced	\$650 / sample	
	Basic	Custom \$335 / hour	
	High Performance	PHI 710 Auger Spectrometer \$650 / hour	
	Micron-spot EDXRF	Rigaku ONYX 3000 Please contact us.	
Elemental and Chemical Analysis	WDXRF	Basic	
		High Performance	Rigaku AZX 400 \$400 / hour ¹⁰
	NMR: Liquid	Bruker Avance III-HD 500 MHz NMR or equivalent	\$100 / sample + \$175 / hour tech time
	NMR: Solid	Bruker Avance III-HD 600 MHz NMR	\$700 / sample
	FTIR	Thermo Scientific Nicolet 6700	\$225 / sample
	ATR-FTIR	Thermo Scientific Nicolet 6700	\$175 / sample
	ICP-MS / ICP-OES	Please contact us.	\$450 / sample ¹¹
	GD-MS	Please contact us.	\$700 / sample
	Pyrolysis GC-MS	Please contact us.	\$600 / sample
	Thermal Desorption GC-MS	Agilent 7890 GC with 5975 MS	\$390 / sample

⁹ Pricing depends on job complexity.

¹⁰ Plus setup fee and job minimum.

¹¹ Plus \$350 prep fee.

PCBA, Cross-Sectioning, Metallography

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APPLICATION	TECHNIQUE / TASK	STARTING PRICE
Cross-Sectioning / Failure Analysis	Standard Plastic Components	\$400 / each
	Ten or More Samples (Bulk Discounted Price)	\$350 / each
	Ceramic Components	\$450-\$500 / each
	Large / Nonstandard Components	\$450-\$500 / each
	Samples Requiring Encapsulation Prior to Cutting (Double Encapsulation)	\$450-\$500 / each
	Additional Slices, Same Mount	\$350 / add'l slice
Dye & Pry Testing	Sample Prep and Pull (Standard Samples) (includes full report)	\$350 / sample
	Large Samples	\$500-\$600 / sample
Light Microscopy: Compound and Stereo Zoom	Image Capture + Linear & Area Measurements (includes full report)	\$175 / hour
Board Cleanliness Testing	Ion Chromatography (IC) Analysis	Please contact us.
	C3 Localized Extraction	Please contact us.
	Full Board Extraction	Please contact us.
Additional Laboratory Services	De-cap Plastic Components (Expose Die & Wire Bonds)	Please contact us.
	AMI - Acoustic Imaging / Scanning Acoustic Microscopy (Delamination, Void Detection, etc)	\$450 / hour
	4-Point-Probe	\$62.50 / spot
	Strain-Gauge Testing	Please contact us.
	Water Contact Angle (includes 5 trials)	\$250 / sample

Other Metrology Services

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APPLICATION	TECHNIQUE / TASK	STARTING PRICE
Metrology & Microscopy Services	Transmission X-Ray (HR): Inspection & Imaging	\$300 / hour
	3D Non-Contact Video Measurement (2-hour minimum)	\$175 / hour
	FULL-SUITE of Metrology Services Available in core labs.	By technique.
Engineering Services and Consulting	Advanced Analysis, Modeling, 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.

You can save money by bundling analytical services, or by enrolling in a customized, subscription-based characterization program.

Contact us to learn more!