

Trusted by leading R&D and manufacturing teams

Thermal Metrology for Material Development, Characterization and Product Validation

Thermal Conductivity | Thermal Boundary Resistance | Volumetric Heat Capacity | Thermal Property Imaging | Emissivity | Melting Temperature



Why Teams Choose Laser Thermal

Proprietary thermal platforms

- Laser Thermal instruments (FASTR & TOPS) are purpose-built to solve measurement challenges not addressed by conventional tools.
- Our contract testing is performed by the platform engineers, ensuring correct execution and results aligned with current and emerging industry needs.

Thermal metrology specialists

- Application-driven thermal testing is our only focus; we run measurements every day.
- Experienced team in test design and interpretation from micro to macro length scales; we recommend the right method for your questions, not force-fit a tool.

Fast, repeatable, reliable results

- Rapid turnaround with high-confidence data, clear deliverables, and documented assumptions.
- Consistent and streamlined workflows backed by decades of experience; results you can trust and share internally or with customers.

From insulation to diamonds, we test it all.

- Thin films
- Thermal Interface Materials (TIMs)
- Bulk substrates and samples
- Coatings
- Liquids, gels & pastes
- Metals & alloys
- Insulation products

High-Value Applications

Optimize material formulations with confidence

Support materials R&D and QC by resolving variability across varying compositions and process conditions.

Design and validate with real data

Capture interfacial resistance, intrinsic properties, and length scale effects for direct use in modeling and reliability.

Evaluate and understand thermal pathways

Quantify heat flow and localized dissipation across multilayer stacks, interfaces, and assemblies.

Resolve spatial variability and local behavior

Use localized, spatial mapping to spot inhomogeneity and non-uniform thermal behavior.

Measure materials in real-use configurations

Generate data reflecting real growth, geometries, and interfaces, not idealized bulk analogs.

Measurement Capabilities

Many of our techniques use one-sided, non-contact optical measurements, well suited for valuable prototypes, with most measurements performed non-destructively. These approaches are also particularly effective for characterizing heterogeneous and anisotropic materials.

PROPERTY	MEASUREMENT RANGE
Thermal conductivity (in-plane, cross-plane)	0.01 to 3,000 + $\text{W m}^{-1} \text{K}^{-1}$
Thermal boundary resistance	$>1 \text{ m}^2 \text{KW}^{-1}$
Thermal resistance	Could span many orders of magnitude based on the actual combinations of thickness and conductivity
Thermal diffusivity	$>0.0025 \text{ mm}^2/\text{s}$
Volumetric heat capacity	$1 \text{ MJm}^{-3} \text{K}^{-1}$ to $4 \text{ MJm}^{-3} \text{K}^{-1}$
Thermal property mapping	10x10 μm to 150x150 mm
Emissivity	Spectral range 0.5 μm to 40 μm
Melting temperature	Room temperature to 4000 $^{\circ}\text{C}$

How Thermal Testing Services Work

Step 01 Consult

Discuss your application, review sample fit, get a measurement recommendation.

Step 02 Propose

NDA, scoped proposal, and quote.

Step 03 Test

Ship samples, measurements performed.

Step 04 Report

Receive your engineering report, discuss results with our engineers.

Standard lead time: 2-3 weeks from receipt of sample. A 3-day expedited turnaround is available for a surcharge.