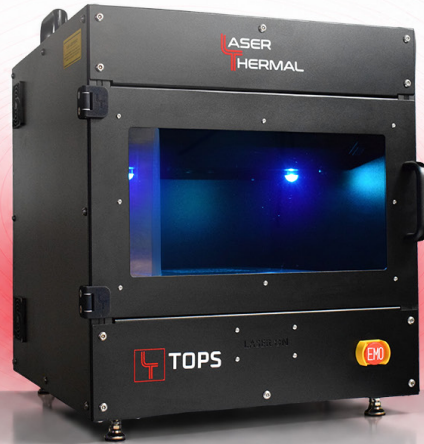


TOPS

OPTICAL METROLOGY FOR
MATERIALS AND ARCHITECTURES

NON-CONTACT, SINGLE-SIDED, DIRECT MEASUREMENT OF THERMAL CONDUCTIVITY

TOPS is the only complete instrument for real-world thermal conductivity characterization: supplier materials, lab-designed materials, production materials. TOPS keeps thermal design and packaging issues from reaching your customer.



0.01-3000+

$\text{W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$
CONDUCTIVITY RANGE

5-30

SECONDS
TEST CYCLE TIME

$\pm 1\%$

REPEATABILITY

$\pm 2\%$

REPRODUCIBILITY

BRIDGING THE CHARACTERIZATION GAP BETWEEN IDEALIZED SAMPLES AND PRODUCTION-READY MATERIALS AND PARTS

Break through the characterization wall

Some test methods need a sample you can't make; others return one averaged number you can't explain. TOPS measures the part as it is and maps where conductivity changes, pinpointing non-uniformity, inclusions, and process defects.

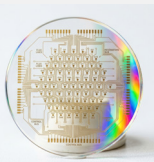
Measure without contact or damage

Traditional methods require surface contact and destructive preparation. TOPS uses a laser to induce a small temperature rise and an infrared camera to extract thermal conductivity directly without contact.

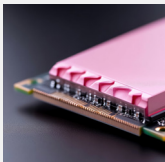
Operate without specialized expertise

When only one specialist can run the test, thermal data waits in a queue. TOPS runs from setup to result without specialized operator expertise, ready for immediate adoption and continuous use on the production floor.

FROM THIN FILMS TO BULK. FROM SOLIDS TO LIQUIDS.



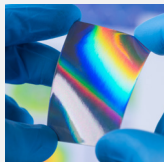
Diamond, SiC
AlN & GaN



Gap Pads & Fillers



TIMs - Gels
& Pastes



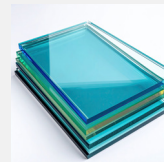
Thin Films &
Coatings



Liquids — TIMs
& PCMs



Solid & Liquid
Metals



Glasses



Foams

TEST RELIABLY. INNOVATE FASTER. DECIDE WITH CONFIDENCE.



CHARACTERIZE MATERIALS AND PARTS WITHOUT ASSUMPTIONS about sample density, heat capacity, or geometry.

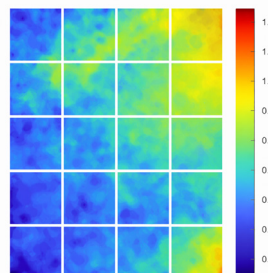


MOVE FROM QUESTION TO ANSWER IN SECONDS. Get thermal conductivity results in as little as 5 to 30 seconds per test, fast enough to support real-time decisions on the production floor.



TRUST THE RESULT. Rely on $\pm 1\%$ repeatability and $\pm 2\%$ reproducibility, so results hold up test after test, not just once.

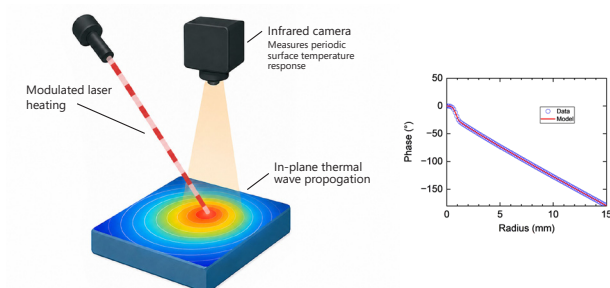
THERMAL PROPERTY IMAGING



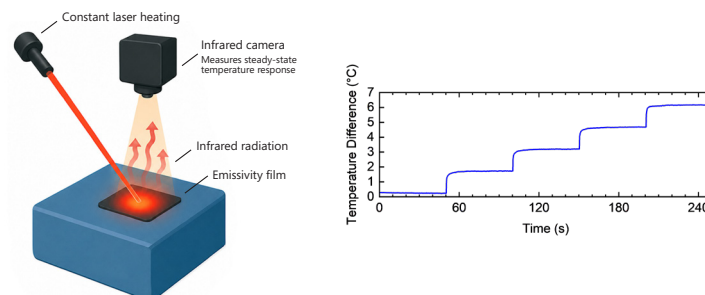
Maps up to 150 x 150 mm at $\sim 200 \mu\text{m}$ per pixel. See exactly where conductivity changes across a part, not just whether it does.

MEASUREMENT METHODOLOGY

LOCK-IN THERMOGRAPHY



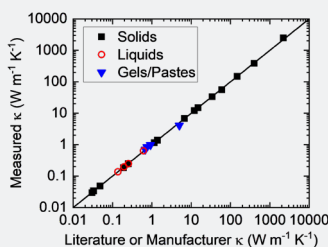
STEADY-STATE THERMOGRAPHY



The instrument uses a laser to induce localized heating at the sample surface, inducing a small temperature rise, and an infrared camera to capture the thermal response. Depending on the material and measurement objective, TOPS applies steady-state or lock-in thermography analysis to extract thermal conductivity directly from the measured data.

VALIDATED ACROSS MATERIAL CLASSES

Measured thermal conductivity vs. literature and manufacturer values for solids, liquids, and gels/pastes - spanning six orders of magnitude.



SOFTWARE SUITE

Fully developed package for data acquisition and automated data analysis

LASER SPECS

Laser spot size:
 $\sim 1 \text{ mm}$ diameter

