PRESS RELEASE

Laser Thermal Awarded DoD OSD Basic Research Office Phase I STTR Contract

Under the STTR contract award, the program will develop technology for advanced metrology of high thermal conductivity materials and interfaces.

Charlottesville, VA, March 3, 2024 - Laser Thermal, a leading metrology tool and service provider of small-scale thermal property measurements, today announced it has been awarded a Department of Defense Phase I STTR contract. The contract will fund the development of advanced thermal metrology technology for use with high thermal conductivity materials and interfaces. The Phase I program period of performance is six months with an additional six-month option extending until February 2025.

In the microelectronics industry, WBG and UWBG materials and devices include high thermal conductivity materials and interfaces with pertinent resistances spanning nano to sub-millimeter length scales. Characterization of these materials with a single platform is challenging and there are limited available commercial options. Most methods require a high degree of user knowledge in advanced optics and physics, for both instrumentation and analysis, and are traditionally only housed in academic institutions and national labs. The current and next generation of horizontal and vertical high-power devices and packages will benefit from commercially viable measurement systems to characterize:

- High-thermal conductivity materials
- Thermal interface resistances
- Sub-surface films, interfaces, heat sinks, etc
- Temperature dependent properties
- Spatially varying thermal resistances with areal length scales on the order of contacts and depth resolution on order of device layers
- Measurements *in operando*

Dr. Jeffrey Braun, Principal Investigator for the program and VP of Strategy and Programs at Laser Thermal, expressed the significance of this Phase I award, stating, "We are honored to be selected and awarded this program by OSD Basic Research Office and we are committed to our development of innovative technologies to address existing and emerging microelectronics thermal challenges."

The results of the OSD BRO STTR program will enable design and manufacture of a high-power density steady state thermoreflectance (SSTR) tool for high thermal conductivity materials such as isotopically pure diamond. It will have integrated temperature testing and electrical probing for temperature dependent property measurement and testing of devices *in operando*. The new high-power SSTR system will enable variable depth sensitivity, spatial mapping and automated thermal property fitting across

these temperature and applied external field capabilities. The new tool will dramatically increase customer ease of use for both data acquisition and, particularly, data analysis, allowing users to understand the most important use cases for temperature testing, electrical biasing, and thermal mapping.

About Laser Thermal:

Founded in 2020, Laser Thermal began as a spinoff from the University of Virginia, and today is a Charlottesville, Virginia-based small business providing accessible thermal measurements of materials primarily focusing on thin films. Laser Thermal designs and manufactures thermal metrology equipment that can measure thermal properties down to nanometer scales. Utilizing optical techniques, Laser Thermal provides simple, accurate, and rapid measurements of the thermal properties of materials. Laser Thermal offers contract testing and tool sales to best serve customer needs.

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