Lockheed Martin Awarded $1.5 Million Contract To Validate Focal Plane Array Technology

Lockheed Martin was awarded approximately $1.5 million by the Defense Advanced Research Projects Agency (DARPA) to validate and investigate focal plane array technology that will improve the size, weight and power of target detection and recognition systems, while also lowering their cost.

Existing target detection and recognition systems employ infrared (IR) focal plane arrays that require cumbersome and expensive cryogenic cooling in order to operate effectively. Under the first phase of a three-phase, 36- month program called High Operating Temperature Mid-Wave IR Focal Plane Arrays (HOT MWIR), Lockheed Martin will establish and validate new IR technology that can operate at or near room temperature -- a capability that does not exist today.

"This leading-edge technology will not only reduce interference and improve performance, but it's lighter, less expensive, easier to produce and more reliable," said Mike Dudzik, director -- Research and Technology at Lockheed Martin Missiles and Fire Control. "We will investigate IR sensor technology in high-temperature operating environments in order to demonstrate compatibility with missile launch detection applications."

The Lockheed Martin effort is based on reducing the area of the detector and integrating it with a patterned plasmonic antenna, which allows the collection of the same amount of data as current sensors, but on a smaller surface. Plasmonic antenna detectors offer a radical new approach to increasing signal-to-noise ratios and consequently allowing operation at high temperature.

"Phase 1 of the HOT MWIR program is a 12-month contract to move the technology from the laboratory to prototype validation," said Dudzik. "The Type II Strained Layer Superlattice (SLS) is one of the most promising new IR materials out there. The material can be adjusted from short wavelengths to very long wavelengths, the significance of which is that the technology development can be applied to other wavebands. This new technology has the potential to be customized and can grow to broader applications."

SLS has been demonstrated in the MWIR at cooled temperatures, but not at near-room temperatures. The total contract has Phase 2 and Phase 3 downselect options, worth approximately $7.8 million, bringing the total estimated value of the program to $9.3 million.

Headquartered in Bethesda, Md., Lockheed Martin employs about 135,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

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