

High Operating Temp Short-Wave Infrared (SWIR) / Mid-Wave Infrared (MWIR) Dual-Band Detectors for Weapon Targeting & Seekers



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SYSCOM: Office of Naval Research (ONR)

www.onr.navy.mil

Program Sponsor: Dan Simons

Other Potential Programs:

Long-range precision fires, shipboard targeting (MUST- HITS), dismounted precision targeting

Current TRL: 4

Projected TRL: 6 / Q2 2024

Keywords:

IR Sensor, Dual-Band Infrared, SWIR/MWIR Sensor, Laser See-Spot Imaging, Weapon Sight

THE CHALLENGE

A single-aperture SWIR/MWIR imaging sensor solution for expanded capabilities in a next-generation, small form factor weapon sight. Attollo Engineering is developing a dual-band SWIR/MWIR infrared camera core to support the U.S. Marine Corp's Integrated Clip-on Advanced Targeting Sight (ICATS) program. The SWIR/MWIR imaging sensor enables a MWIR thermal imaging capability for the weapon sight while also exploiting SWIR phenomenology such as laser see-spot, imaging through glass, and camouflage detection. As part of this development effort, Attollo has conducted materials and device development to improve state-of-the-art dual-band SWIR/MWIR detectors; designed, fabricated, and demonstrated a high-definition, small pixel pitch, low-noise, dual-band SWIR/MWIR ROIC; delivered TRL4 prototype integrated dewar cooler assemblies (IDCAs); and is developing a ruggedized, shock-hardened TRL6 IDCA for the Navy and the USMC's ICATS system integrator, Kollsman/Elbit USA. The final sensor and the various component technologies have wide-ranging applications with the Navy and other services in the areas of dual-band, dual-mode (active/passive) seekers, advanced targeting systems, and shipboard targeting systems.

THE INNOVATION

A single imaging sensor/aperture with user-selectable and independent waveband sensitivity in the SWIR and MWIR bands enabling long-range, day/night thermal imaging weapon sight capability with the MWIR channel with the ability to see through glass and visualize battlefield lasers with the SWIR channel. The same detector material could be leveraged and developed for active/passive seeker applications that support a wider variety of targeting and seeker modalities.

THE NAVAL BENEFIT

Benefits for the Navy include more functionality and capability in a single sensor; reduced size, weight, and power compared to a discrete component solution; and broader and more flexible support of varied mission sets with a single sensor technology solution.

THE FUTURE

Attollo is working with several primes to integrate the dual-band SWIR/MWIR sensor into weapon sights and targeting systems. Attollo is also developing technology to push the dual-band SWIR/MWIR technology to smaller pixel pitches and to incorporate integrated pulsed laser sensing and decode within the same sensor.

Innovation Center at 2022 Navy Gold Coast



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