

1. PAPER TITLE

INNOVATIVE TECHNOLOGY FOR LOW-COST HIGH-PERFORMANCE UN-COOLED MWIR/LWIR DETECTORS

2. AUTHORS

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3. ABSTRACT TEXT Approximately 250 words.

The rapid growth of the passive night vision IR camera market is largely limited by camera cost, of which the IR detector is the single most expensive component. High-end applications require very expensive photon detectors that operate at cryogenic temperatures and must be vacuum packed. Lower-end applications can now be achieved by lower-cost, lower-performance thermal detectors that still require vacuum packaging. Yet, cost and maintenance of cameras based on thermal detectors still pose a barrier to mass market applications.

Sirica presents a new approach enabling photon (quantum) IR detection at room temperature, eliminating the need for cooling and vacuum packaging, thus, achieving the superior performance equivalent to photon detectors at prices significantly lower than low performance thermal detectors. This breakthrough is based on novel silicon-based material that enables the formation of non-equilibrium free carriers that can be maintained long enough to absorb IR photons and release corresponding photoluminescence in the visible or NIR range that could be easily detected by a regular CMOS/CCD imager.

Experimental results showing photo-induced free carrier IR absorption and IR-induced photoluminescence, and the schematic mode of operation of the device will be presented.

4. KEYWORDS Maximum of five keywords.

Uncooled; Quantum; IR detector;