



Mast Mounted Stryker Combat Vehicle

OBJECTIVE / SOLUTION

Enhance the producibility of the sensors developed under ATO[D]-D.FP.2006.09 Passive Infrared Cueing System (PICS). Specifically, this work will address sensor manufacturing and performance/functionality/cost of the PbSe focal plane arrays by developing a monolithic fabrication process. This will significantly reduce touch labor, increase FPA yields, and reduce focal plane array/sensor cost by the development and application of new manufacturing techniques.

This proposed effort will improve the cost, producibility, and robustness of the PICS detector by developing a High Volume/High Yield Production process, rehosting on commercially available complementary metal oxide semiconductor (CMOS) wafers and redesigning the readout integrated circuit (ROIC). The effort will include development of high yield, high volume process, redesign focal plane array based for a direct deposition on silicon wafers and transition the deposition process to commercially available 8" wafers. The project will redesign the manufacturing process to increase yield and

Infrared Lead Selenium (PbSe) Focal Plane Array (FPA) Manufacturing

Improves sensor manufacturing and performance, functionality, and cost of PbSe focal plane arrays through the development of a monolithic fabrication process.

operability, eliminate hybridization of the ROIC and the FPA by direct deposition, test PbSe lots, develop and test direct deposition compatible ROICs, grow PbSe FPAs with an automated process, and integrate and test focal plane arrays.

ACHIEVEMENTS

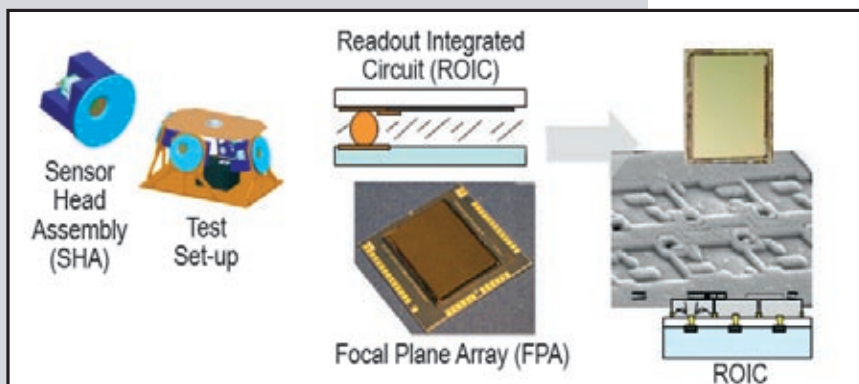
Initial focus has been successful with regard to growing the detector material (PbSe) directly on the silicon substrate. Automation of processes for improved repeatability and surface characteristics has been achieved.

BENEFITS

- Increased survivability of Army ground and airborne platforms/personnel
- Reduced manufacturing cost and Size, Weight, and Power (SWAP)
- Supports the existing ATO[D]-D.FP.2006.09 PICS

STATUS

- Initial work of deposition process or application on silicon substrate has been successful
- Next step involves creating FPA with PbSe on silicon
- Preliminary design of ROIC is complete and approaching CDR



Wafer Manufacturing Process

WEAPON SYSTEMS / SECONDARY ITEMS IMPACTED

- Ground and Airborne platform Passive Threat Warner requirement

POTENTIAL COST AVOIDANCE

- Return on Investment is 2.0:1 with a cost benefit of \$392.8M