

<b>SBIR 06.2 PHASE I - AWARD DETAILS</b>	
<b>ORGANIZATION</b>	ARL
<b>TOPIC NUMBER</b>	A06-065
<b>CONTRACT NUMBER</b>	
<b>YEAR OF AWARD</b>	
<b>AWARD START DATE</b>	
<b>AWARD COMPLETION DATE</b>	
<b>PROPOSAL NUMBER</b>	A062-065-0929
<b>TITLE</b>	High Sensitivity Rugged Array Detectors for Field Deployed Instruments: Low-Light Level Camera for Laser-Induced Breakdown Spectroscopy (LIBS) and Raman Spectroscopy
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<b>KEYWORDS</b>	High Sensitivity Photo Detector Array, Laser-Induced Breakdown Spectroscopy, Raman Spectroscopy
<b>ABSTRACT</b>	Low-light-level photodetector arrays are proposed for detecting the weak optical emission spectra from the trace atoms in the laser-induced breakdown spectroscopy (LIBS). The proposed semiconductor image intensifier and low-light-level camera utilize the miniaturized and monolithically integrated version of a proven solid-state detector technology, and is expected to be able to detect femto-watts (namely, $10^{-15}$ of 1 watt) of optical signal on each pixel with a gating time of 1 micro-second. The proposed research and development will significantly increase the sensitivity of the current LIBS chemical sensor systems, and therefore, enable more accurate detection of explosives at larger distances.
<b>BENEFITS</b>	Besides its application in high sensitivity LIBS instruments for improvised explosive device detection, the low-light-level camera can also be used in Raman, fluorescence, and near-infrared spectroscopy apparatus for human health status monitoring, material analysis, industrial process control as well as in vision aid ophthalmologic devices and military night vision goggles.