

Principal Investigator:
Dr. Glenn Bastiaans
Intelligent Optical Systems
(424) 263-6300 (General)
(424) 263-6319 (Direct)
GBastiaans@intopsys.com

Concept of the ultimate deployment of IOS's THz system for detecting hidden explosives:

- Scan of safe THz radiation
- Control area to monitor scene
- Image with false color highlighting to indicate persons and objects associated with a detected threat.



Explosives will be detected by using a beam of THz radiation to interrogate objects and people, and then determining the absorbance of the reflected THz radiation at signature frequencies. Pattern recognition will be applied to identify explosive compounds and metal objects concealed under clothing and in packages. A THz image will be created by scanning a wide beam over a field of view, and fusing the information with a visible video image. The feasibility of explosives identification and standoff detection with THz radiation has already been demonstrated in SBIR work funded by the Department of Homeland Security. A key technical challenge has been met by developing a more powerful THz source to produce a beam of THz radiation at multiple discrete frequencies. A commercial-off-the-shelf THz spectrometer can be readily adapted to monitor the intensity of reflection of multiple THz frequencies, in real time. When used with the IOS THz source and algorithms for threat identification, monitoring for concealed threats can be achieved for nearby targets, such as those found in non-sterile areas of airports.

APPLICATIONS

- Detection of explosives and metal objects concealed by clothing, luggage, packing material
- Standoff detection at distances of 1 m or greater
- Detection within 10 sec or less

FEATURES & BENEFITS

- Detects concealed threats
- Portable—for use indoors and outdoors
- Advanced field of view scanning system will be designed to operate from a fixed location, or mounted on a vehicle
- High selectivity
- Maintains personal privacy via coarse imaging