

Stand-Off Detection of Explosives and Hazardous Chemicals

Advantages/Features

Detection of wide range of traditional and home made explosives

Eye-safe IR laser interrogation

Portable and handheld

Adjustable wavelengths for detection of different hazardous chemicals and explosives

Applicable in mobile and static applications

Adaptable to detecting drugs of abuse

Applications

Stand-off IED detection

Drug Enforcement

Handheld/portable systems

VBIED and PBIED

Counter IED

Left-of-boom

Defeat the network

For more information contact:

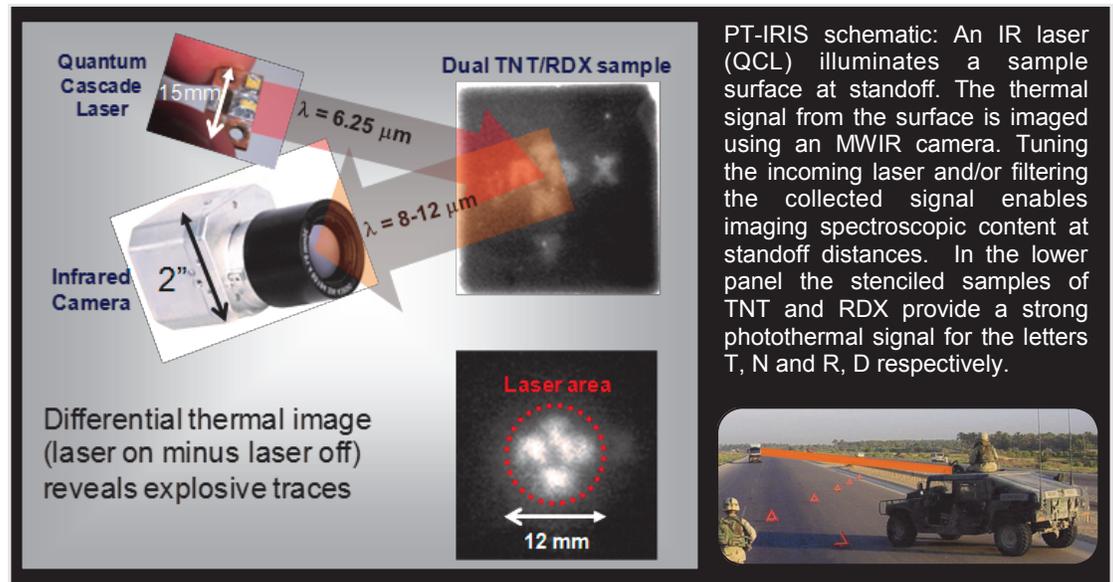
Rita Manak, Ph.D. Head,
Technology Transfer Office

(202) 767-3083

rita.manak@nrl.navy.mil

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The Naval Research Laboratory (NRL) has developed a Photothermal Infrared Imaging Spectroscopy (PT-IRIS) technology for stand-off detection of explosives, illicit drugs, chemical warfare agents and biochemical warfare agents. PT-IRIS has been demonstrated for standoff or proximity detection of explosives. This approach employs quantum cascade lasers (QCL) to illuminate a sample surface with one or more wavelengths which are selectively absorbed by analytes of interest. With eye-safe QCL power levels this results in modest selective heating (1-2 °C) of particulate explosives within a few milliseconds, which can be readily monitored at video frame rates of commercial IR cameras. Utilizing compact QCL light sources and an IR focal plane array to image the illuminated area, a portable, handheld system design can be realized. A schematic showing the principle of operation for PT-IRIS is shown in the figure above. As an eye safe system, PT-IRIS is ideal for probing surfaces of vehicles, places, people, packages, and boarding passes for explosives and other hazardous chemicals of interest.

References

Related U.S. patent number 8,101,915 entitled "Detection of chemicals with infrared light"

"Stand-off Detection of Trace Explosives by Infrared Photo-thermal Spectroscopy" R. Furstenberg, C. A. Kendziora, J. Stepnowski, S. V. Stepnowski, M. Rake, M. R. Papantonakis, V. Nguyen, G. K. Hubler, and R. A. McGill, *Applied Physics Letters*, Volume/Issue 93/22, (December 2008).

"Advances in stand-off detection of trace explosives by infrared photo-thermal imaging", Kendziora, CA; Furstenberg, R; Papantonakis, M; Nguyen, V; Stepnowski, J; McGill, RA, Proc. SPIE 7664, 76641J (2010).

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