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Proceedings Article

Smart dust infrared sensors for standoff explosives detection

Alexey E. Kovalev ; Matthew G. Bray ; Emil A. Hernandez-Pagan ; Theresa S. Mayer ; Douglas H. Werner

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Proc. SPIE 7304, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing X, 73041A (May 08, 2009); doi:10.1117/12.818798

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From Conference Volume 7304

Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing X
Augustus W. Fountain III; Patrick J. Gardner
Orlando, Florida, USA | April 13, 2009

Abstract References

abstract

We demonstrate a prototype sensor based on a new eye-safe detection strategy with the potential to report the presence trace explosives from standoff distances of up to 100 m. The method detects the reflected infrared radiation from groups of micron-sized chemically-sensitized metallodielectric nanostructures. Specifically, the sensors change from reflecting to absorbing nearly 100% of the incident probe beam radiation over a narrow band of mid-IR wavelengths when explosive vapor is present. This strategy is not limited to the detection to explosives, but can also be used to detect other threats by modifying the chemically-sensitive layers of the nanostructure.

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Topics

Explosives detection ; Infrared sensors ; Explosives ; Sensors ; Nanostructures ; Radiation ; Laser eye protection ; Mid-IR ; Infrared radiation

Citation Alexey E. Kovalev ; Matthew G. Bray ; Emil A. Hernandez-Pagan ; Theresa S Mayer and Douglas H. Werner "Smart dust infrared sensors for standoff explosives detection", *Proc. SPIE* 7304, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing X, 73041A (May 08, 2009); doi:10.1117/12.818798; http://dx.doi.org/10.1117/12.818798

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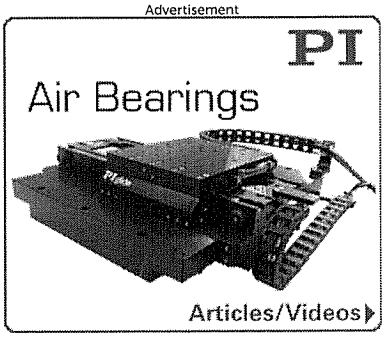
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Proceedings Article

Smart phones: platform enabling modular, chemical, biological, and explosives sensing

Amethist S. Finch ; Matthew Coppock ; Justin R. Bickford ; Marvin A. Conn ; Thomas J. Proctor ; Dimitra N. Stratis-Cullum

[+] Author Affiliations

Proc. SPIE 8710, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XIV, 87100D (May 29, 2013); doi:10.1117/12.2014759

Text Size: A A A

From Conference Volume 8710

Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XIV
Augustus W. Fountain
Baltimore, Maryland, USA | April 29, 2013

Abstract

abstract

Reliable, robust, and portable technologies are needed for the rapid identification and detection of chemical, biological, and explosive (CBE) materials. A key to addressing the persistent threat to U.S. troops in the current war on terror is the rapid detection and identification of the precursor materials used in development of improvised explosive devices, homemade explosives, and bio-warfare agents. However, a universal methodology for detection and prevention of CBE materials in the use of these devices has proven difficult. Herein, we discuss our efforts towards the development of a modular, robust, inexpensive, pervasive, archival, and compact platform (android based smart phone) enabling the rapid detection of these materials. © (2013) COPYRIGHT Society of Photo-Optical Instrumentation Engineers (SPIE). Downloading of the abstract is permitted for personal use only.

Topics

Chemicals ; Explosives ; Personal digital assistants ; Biological weapons ; Improvised explosive devices

Citation Amethist S. Finch ; Matthew Coppock ; Justin R. Bickford ; Marvin A. Conn ; Thomas J. Proctor, et al.
" Smart phones: platform enabling modular, chemical, biological, and explosives sensing ", *Proc. SPIE* 8710, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XIV, 87100D (May 29, 2013); doi:10.1117/12.2014759; http://dx.doi.org/10.1117/12.2014759

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