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Compact Spatial Fourier Transform Spectrometer Technologies for Standoff Chemical Identification Applications

Background: Spectrum Photonics is a small business located at the Manoa

<u>Areas of Interest:</u> Chemical sensing efforts have focused on IR spectroscopic methods using compact spatial Fourier Transform spectrometer-based methods.

Innovation Center, Honolulu, Hawaii

We specialize in compact IR spectral imaging and remote chemical sensing





potassium chlorate (PC) target

potassium perchlorate target

LWIR spectral image

false-color

Standoff detection of HME compounds images and spectra recorded outdoors - **25 meter standoff, ambient illumination** -

Technologies demonstrated for various chemical detection applications, including:

- Standoff detection of solids, including home-made explosive (HME) compounds
 (depicted in figure to the left)
- Chemical microimaging, complex mixtures

Convention panchromatic LWIR (thermal) image



Past and current funding, US DoD sponsors:

False-color LWIR image: chemical identification w/ spectral library & FTS

- DARPA
- US Army

9.0 9.5 10.0 10.5

- US Air Force
- JIEDDO
- ONR
- JPM NBC CA

We are <u>interested to collaborate</u> as part of a team that focuses on standoff chemical detection using an active illumination strategy coupled with one or more compact IR spectrometer detectors

We seek to team with partners having specialized integrative capabilities, including:

• Chemical microimaging, fingerprints

3rd "touch" post-contact with crushed Potassium Chlorate. Black painted aluminum substrate

Automated Matched Filter PC Particle Detection





 Aerosolized plumes (shown: 3 km)

Liquids on surfaces





- Active IR source technologies suitable for 30+ meter standoff probe illumination
 - Advanced chemical detection algorithms, especially remote spectral sensing systems



For more information:

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