Researchers at the University of South Florida have developed a method for detecting triacetone triperoxide (TATP) explosive clouds associated with a triacetone triperoxide (TATP) explosive attached to a hard target remotely through the use of lidar.

Triacetone triperoxide (TATP) is a peroxide-based explosive often used in terrorist attacks due to its easy synthesis from readily available materials. Additionally, TATP is extremely difficult to detect due to its lack of UV absorbance, fluorescence, or facile ionization. Therefore, a detection method for TATP is urgently needed.

Our scientists have developed a method for detecting a triacetone triperoxide cloud associated with a triacetone triperoxide explosive attached to a hard target by operating differential-absorption lidar lasers to transmit a laser beam toward the hard target at differing wavelengths. A backscattered laser beam reflected from the lidar target is detected, because a cloud of triacetone triperoxide in front of the lidar target and between the lidar target and the differential-absorption lidar system produces a differential-absorption signal having characteristics that identify the triacetone triperoxide. This method of detection is viable for various hard targets including: persons, aerosols, clouds, buildings, etc.

This technology has the potential to aid military and other public security agencies in the detection and interdiction of improvised explosives.

**ADVANTAGES:**

- Safer for operators
- Remote detection
- Can be adapted to various device configurations

**Remotely Detect Clouds Associated with Triacetone Triperoxide Explosives**

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