

Chemists offer law enforcement crime solving tool

June 19 2012



UAlbany researchers analyze gunshot residue to determine the caliber and type of weapon used in a crime.

(Phys.org) -- University at Albany researchers have developed a method to determine the caliber and type of weapon used in a crime by analyzing gunshot residue (GSR). Using near-infrared (NIR) Raman microspectroscopy and advanced statistics, the new technique may play a pivotal role in law enforcement cases and forensic investigations. The research was highlighted in a recent issue of [Analytical Chemistry](#).

Gunshot residue comprises particles from the parts of the ammunition and firearm that explode or reside near points of explosion including the primer, propellant, and tiny particles of the cartridge case and gun itself. Since residue can be recovered from several locations in the [crime](#) scene, it may be utilized for both physical and chemical evidence: GSR establishes that the shooting took place and a person participated in the

shooting.

"If a crime is committed that involves a gun, we can examine the gunshot residue to help determine the size and type of ammunition used," said UAlbany professor of chemistry and lead researcher Igor Lednev. "Then through comparisons and elimination, it is quite likely to determine what kind of a gun was used in the crime."

Lednev, a member of the White House Committee on Forensic Science, explained, "In the absence of a weapon and discernible ammunition remainders at a crime scene, the ability to analyze and positively identify ammunition and firearms would have a significant impact on the efficiency of a criminal investigation."

The research team combined GSR with Raman spectroscopy, in which laser light of a specific wavelength is shined on a sample, sending its molecules vibrating. Well-suited for forensic analysis, spectroscopy does not destroy evidence, requires limited sample preparation, and has a range of applications including the identification of explosives, paint, textile dyes, drugs, and bodily fluids.

Lednev concludes that more analysis is needed before CSI teams employ the method in a courtroom. One day, investigators might even be able to flip through a database of Raman spectra of different ammunitions to more quickly link that crime-scene residue to a specific kind of gun.

Provided by University at Albany

Citation: Chemists offer law enforcement crime solving tool (2012, June 19) retrieved 26 April 2024 from <https://phys.org/news/2012-06-chemists-law-crime-tool.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private

study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.