

A NOVEL APPROACH FOR IN SITU DETECTION OF GUNSHOT RESIDUE. **Igor K. Lednev.** University at Albany, State University of New York, 1400 Washington Ave., Albany, NY 12222, USA (ilednev@albany.edu)

Gunshot residue (GSR) is an important type of forensic trace evidence that is produced when a firearm is discharged. GSR can be subdivided into two sub classifications—organic and inorganic. A current method based on scanning electron microscopy coupled with energy dispersive X-ray spectroscopy is used for detection and identification of inorganic GSR particles only. However, the total amount of organic GSR (OGSR) generated due to the discharge of a firearm is much larger than the amount of IGSR. In addition, OGSR particles are typically much larger in size than IGSR particles. We have developed a new two-step approach for fast detection of OGSR particles using fluorescence spectroscopy followed by a confirmatory identification by Raman microspectroscopy. In our first proof-of-concept study we used adhesive tape as a method of collecting OGSR particles. Most recently, we have significantly expanded this methodology by demonstrating the possibility of detecting and identifying GSR particles in situ on cotton fabric eliminating the need for the initial GSR particle transfer stage. In this presentation, we will show the results of these recent studies, discuss challenges and future steps for the proposed two-step method development for the detection and confirmatory identification of GSR.