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Analysis Gunshot Residue (GSR)–reconstruction of crime scenes

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GSR particles from the surroundings of bullet hole have been characterized as a function of primer type and particle distribution. GSEM images were used to verify size and shape of the GSR particles and EDS to verify the elemental composition in a single particle. The same specimens are further subjected to Time of Flight Secondary Ion Mass Spectrometry (ToF SIMS) and X-ray Photon Spectroscopy (XPS) analysis with a view to identify the respective surface chemistry, molecular nature and molecular mass of the GSR particles. Both inorganic and organic components of GSR in the elemental and combined form can be identified using SIMS. The study was helpful in distinguishing between real GSR particle derived from a particular firearm and those derived from environmental contamination for forensic investigations. Shooting distance, type of firearm and nature of the incidents have been studied from the from characterization results.

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