Validation of an analytical method for the identification of SmartWater CSI Forensic Marking Technology

by Demi Moreda | Claudia Martinez | Tatiana Trejos | Jose Almirall

Abstract Details

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Abstract

SmartWater is a chemical taggant used as a crime deterrent. The chemical taggant is a colorless liquid that fluoresces yellow under ultra-violet (UV) light and contains distinctive, identifiable and traceable elemental composition. For instance, upon a break and entry scenario, the burglar is sprayed with a solution that has an elemental signature custom-made to a specific location. The residues of this taggant persist on skin and other objects and can be easily recovered for further analysis. The product has been effectively used in Europe as a crime deterrent and has been recently introduced in South Florida. In 2014, Fort Lauderdale Police Department reported the use of SmartWater products with a reduction in burglaries of 14% [1].

The International Forensic Research Institute (IFRI) at FIU validated the scientific foundation of the methods of recovery and analysis of these chemical tagging systems using LA-ICP-MS. Analytical figures of merit of the method such as precision, accuracy, limits of detection, linearity and selectivity are reported in this study. Moreover, blind samples were analyzed by LA-ICP-MS to compare the chemical signatures to the company’s database and evaluate error rates and the accuracy of the method.

This study demonstrated that LA-ICP-MS could be used to effectively detect these traceable taggants to assist law
enforcement agencies in the United States with cases involving transfer of these forensic coding systems.