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The effect of washing and blood enhancement reagents on the use of Raman spectroscopy for human blood identification.

Raman spectroscopy has been demonstrated to have the ability to identify body fluids commonly found in forensic investigations. Identifying the type of body fluid or fluids present can aid in the reconstruction of the sequence of events, allowing investigators to determine what crime, if any, has been committed. This study aimed to further scrutinize Raman spectroscopy's ability to identify human blood in simulated evidence samples. Blood stains on a variety of fabrics were laundered and subsequently enhanced using commonly used blood enhancement reagents. Stains were also extracted from their substrate and analyzed. It was determined that Leuco Crystal Violet (LCV) and Coomassie blue create too much interference to identify the blood while on the fabric. However, it was possible to subtract the Luminol signal from the spectra, thereby providing a usable blood signature. Further to this, by extracting the fluids from their substrates, even post enhancement, it was possible to identify blood treated with Luminol and LCV. This study further explored the utility of Raman to identify human blood, not simply on laboratory clean samples, but on simulated evidence samples, thereby highlighting the utility of this technique and potential use in forensic casework.