B8 Imaging the Unseen with Digital UV/IR Technology: Preliminary Bruising and Tattoo Studies

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After attending this presentation, attendees will learn about the electromagnetic spectrum and its relevance to visible, ultraviolet, and infrared digital photography. This presentation will also cover the documentation of visible, ultraviolet, and infrared radiation and their affects on different items of evidence as they transmit (remove), reflect (lighten), and/or absorb (darken) with each type of radiation, with digital single lens reflex (SLR) camera systems. Camera/lighting settings and equipment will also be suggested for specific types of evidence. In particular, the preliminary research results on revealing/documenting both fresh and healed bruising and removing/darkening tattoos with ultraviolet (UV) and infrared (IR) radiation will be discussed. These preliminary research findings aim to highlight the possible evidentiary results that can be obtained through the use of these techniques, and how

easily they can be accomplished with a UV/IR modified digital SLR camera. Successful results were obtained with each tattoo and bruise tested; of particular note is a case where the bruise was revealed seven months after it had disappeared from human sight. It is clear that both of the referenced techniques have yielded results proving they could be of great use at investigative stages with identifications and abuse cases.

This presentation and the research proposed within it will impact the forensic science community by demonstrating: (1) the need for the everyday use of both visible and ultraviolet/infrared (UV/IR) photography in forensic cases; (2) the ease with which these techniques can be accomplished via digital photography; and, (3) the impacts possible at various stages in the criminal justice process which can be achieved by revealing and documenting evidence that often goes unnoticed.

The potential of ultraviolet/infrared (UV/IR) photography to aid in investigations has yet to be fully realized and utilized by the forensic community. Past film based methodologies for this type of photography were difficult, unpredictable, inconsistent and/or expensive, resulting in its limited use. However, the once popular film based camera systems are being replaced by digital equivalents, and as such, it is time these old film methodologies were reevaluated as potential tools with the new digital single lens reflex (SLR) camera systems. UV/IR photography no longer needs to be thought of as difficult, unpredictable, inconsistent, and/or expensive since digital camera systems offer a framework to make these techniques and applications a more feasible option. This research demonstrates the need for the standard use of both visible and UV/IR digital photography in forensic cases by identifying the possible unique evidentiary items these techniques can now provide for identifications and abuse cases; as well as the ease with which these techniques can now be accomplished through digital means. The speed with which such results can now be obtained and distributed has the potential to greatly impact and expedite cases at both the investigative and prosecutorial stages.

Infrared, Ultraviolet, Photography

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