B61 Latent Print Development on Duct Tape Using Rhodamine 6G/Tween® 20 Solution on Simulated Evidence Samples

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After attending this presentation, attendees will have an opportunity to investigate this process and, in the future, possibly bring to their laboratories a latent print developing process that will both reduce the processing time and the materials needed.

This presentation will impact the forensic science community by offering a possible alternative latent print developing process for adhesive tape with results of equal if not better quality to two currently used processing methods for gray duct tape.

Forensic examiners are able to obtain multiple forms of information from gray duct tape submitted as crime scene evidence. While this can include DNA and trace evidence, it is also possible to apply one of the oldest forensic disciplines: the examination and development of latent fingerprints. While there are multiple techniques used to process adhesive tape for latent prints, currently different procedures are employed for processing the adhesive side versus the non-adhesive side of the tape. A parent study to this research optimized a rhodamine 6G/Tween® 20 solution that was successful in allowing both sides of adhesive gray duct tape to be simultaneously developed for latent prints after cyanoacrylate fuming, therefore shortening the overall processing time and materials. The results obtained from the former study were dependent on the use of pristine tape samples not often received as evidence, whereas the focus of this research involves validating this optimized solution for use on tape samples representative of the conditions commonly found in real-life crime scenes.

The research presented summarizes the results obtained when samples of gray duct tape were prepared to simulate real-life evidence samples, separated, and subsequently processed for latent fingerprints. Tape sample preparation involved attaching sample adhesive side to adhesive side, adhesive side to non-adhesive side, and simulations meant to represent the binding of a victim. Tape separation techniques included the use of adhesive neutralizer un-du®, a freezing technique, and the application of liquid nitrogen. After separation, each tape sample was processed using one of three processing techniques. These included either the optimized rhodamine 6G/Tween® 20 solution, crystal violet, or P-Methoxybenzylamino-4-nitrobenz-zoxa-1,3-Diazole (MBD). Three troubleshooting studies compared how the rhodamine 6G/Tween® 20 solution interacted with seven different brands of gray duct tape, two different fuming techniques, and three different alternative light sources.

Results obtained supported the conclusion that the optimized rhodamine 6G/Tween® 20 solution is a successful method for developing latent fingerprints simultaneously on both sides of duct tape samples representing the condition often encountered as evidence to a crime.

Latent Prints, Duct Tape, Rhodamine 6G