NEW REAGENT FOR THE ENHANCEMENT

OF

BLOOD PRINTS

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Most latent prints left inadvertently on articles at crime scenes consist of latent residue or body oils and are developed by means of powder. When it is necessary to enhance blood impressions, a variety of methods are available to choose from. Many, including Benzidine, and O-tolidine, are recognized carcinogens, requiring special safety precautions. Some, such as Amido Black and Ninhydrin, require the print be subjected to heat prior to developing. This presentation will discuss a new staining technique for the development of latent prints left on the adhesive side of tape, and bloody prints.

Coomassie Brilliant Blue R250, is a general protein stain used routinely in Forensic Serology sections. Coomassie is more sensitive than crystal violet stains. Coomassie has a distinct advantage over crystal violet, in that the Coomassie stain utilizes a destaining solution to clear the background.

Reagents

Coomassie Staining solution

0.44g	Coomassie Brilliant Blue R250
40ml	Glacial Acetic acid
200ml	Methanol
200ml	Distilled water

Destaining solution

40ml	Glacial Acetic Acid
200ml	Methanol
200ml	Distilled water

Another newly developed stain which does not use methanol, thus reducing running of some inks, is Crowle's Double Stain. The components are:

Crowle's Staining solution

2.5g	Crocein Scarlet 7B
150mg	Coomassie Brilliant Blue R250
50ml	Glacial Acetic Acid
30ml	Trichloracetic Acid
	(Dilute to 1 liter with Deionized water)

Crowle's is used in the same manner as Coomassie.

Method

The bloody articles or tape are placed in an inert tray (or container) with the staining solution, and agitated. Depending on the type of surface and age of the print, the materials are developed for 2 to 30 minutes. The Exhibit is then placed in the destaining solution for approximately 1 minute and agitated until the background clears. If more detail is required the Exhibit can be restained numerous times. The solution may be continually poured over large items until prints are developed, although Exhibit submersion in the solution is preferred.

Results and Discussion

Proper handling procedures should be employed with any Latent exhibits. Due to the numerous techniques available to enhance prints, the nature of the surface to be examined will have a determining effect on the choice of reagent to be used. Use test prints on a like surface prior to evidence staining to determine surface suitablility and stain time.

Sensitivity studies were conducted comparing crystal violet, Coomassie and Crowle's. Testing was conducted using 50ul of diluted blood that was dried on glass and paper. Coomassie and Crowle's reacted with dilutions of 1:30,000 where crystal violet reacted with dilutions of 1:10,000. Dilutions of 1:20,000 on paper reacted with Coomassie and Crowle's. Detection limits on paper using crystal violet could not be conducted due to heavy background staining.

The above procedure has been used successfully on numerous cases. Bloody latent prints on bedsheets, a nightgown, wood and glass have been enhanced with Coomassie without any heating or other special preparation of the sample.

Experimentation with tape has shown that aged latent prints can be detected with less background staining utilizing Coomassie than with crystal violet.

Testing of scotch tape containing latent prints on the adhesive side was conducted. Prints 30 days old were tested, utilizing the three stains. Crowle's stain detected the prints with no background staining, whereas, with crystal violet, even though prints were detected, they were not readily visible due to background staining. Coomassie detected the prints but caused deformation of the tape due to partial dissolution.

Crowle's and Coomassie are the stains of choice for staining latent prints on the adhesive side of tape, principally due to their ability to destain the background. Silver duct tape, 90 days old, was stained with Coomassie, showing clear prints with no background staining.

No serological analysis can be performed following the staining of bloody prints. All serology samples must be removed before staining.