



LATENT FINGERPRINT DETECTION USING FLUORESCENT POWDER



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ABSTRACT

This research investigates latent fingerprint detection using fluorescent powder dusting, utilizing UV LED Black Light on four different surface types: slide glass, Colgate toothpaste box, brown envelope, and white matte plastic. The fluorescent images of the latent fingerprint patterns detected are recorded with a digital microscope camera, and all image data are input into the S-EYE software for high-resolution imaging. The data is then analyzed to count the minutiae points. The results are compared with the experimental findings of latent fingerprint detection using nano-sized black carbon powder on the same surfaces. The experiment showed that latent fingerprint images obtained using fluorescent powder dusting under UV LED Black Light had better quality than those detected with carbon dusting, particularly on slide glass and Colgate toothpaste boxes. However, on white matte plastic, the carbon powder showed better efficiency.

INTRODUCTION

Fingerprint patterns are one of the easiest and most reliable forms of evidence for identifying individuals. This process, known as a Positive Test, provides definitive proof—if there's a match, it's a match, and if not, it isn't. Fingerprints are considered highly valuable and reliable, with no evidence to contradict their uniqueness. Since Scotland Yard started recording fingerprints in 1901, no cases have been reported where two individuals have identical fingerprints.

CONCLUSION

The experiment found that the luminescent carbon powder mixture is more effective than pure carbon powder on microscope glass and toothpaste box surfaces, as shown by the difference in the number of defects. However, on the opaque white plastic surface, carbon powder is more effective than the luminescent powder mixture due to its white color.

METHODOLOGY



1. Take a brush dipped in a mixture of carbon powder and luminescent powder, then brush it onto the surface. This will reveal latent fingerprints.

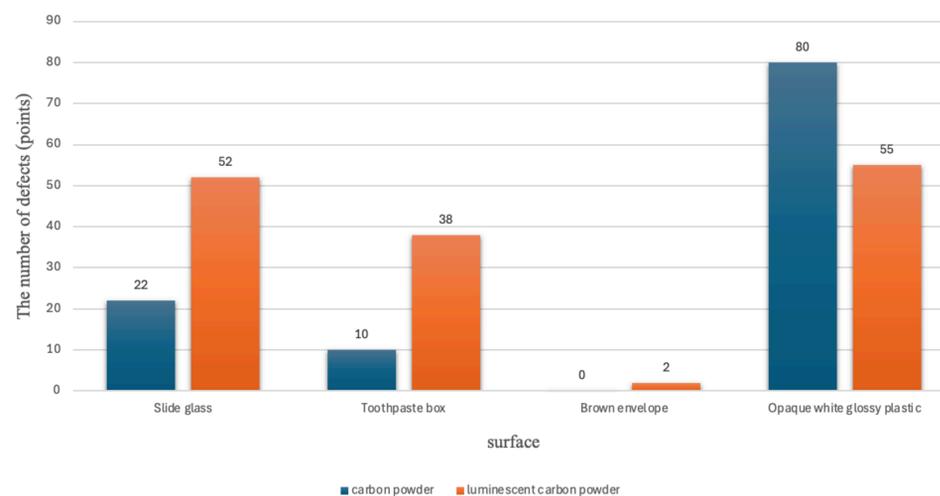
2. Take a picture of the surface we brushed using a digital microscope.



3. Examine the image to identify the latent fingerprint patterns.

RESULT

The graph shows the number of defects and compares the types of dust powders on different surfaces.



The graph shows that the luminescent powder mixture is effective on microscope glass and toothpaste box surfaces. However, on the opaque white plastic surface, carbon powder is more effective.

REFERENCE

(2556). form https://archive.lib.cmu.ac.th/full/T/2556/scfor40456ts_ch2.pdf