



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

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Project Title
SuperGlue Girl Part Deux! Will Adding a Substance during Cyanoacrylate Fuming Create a "One Step" Fuming Process?

Abstract

Objectives/Goals
The objective is to determine if adding a substance during the cyanoacrylate fuming process will make a latent print appear in color. Latent print labs now fume latent prints using the cyanoacrylate fuming process and apply color to the latent print after fuming for preservation and identification. My goal is to eliminate the step of adding color to a latent print after fuming by adding a substance during the process of fuming creating a "One Step" fuming process. I believe it would be a value to the forensic latent print field.

Methods/Materials
The experiments involved cyanoacrylate (superglue) fuming acrylic key chains that had been prepared with a latent thumb print from the same subject. Nine different substance test groups were set up and tested (Sodium Silicate, Barium Carbonate, DMSO, Invisible Ink, Phenolphthalein, Iodine, Barium Sulfate, Cobalt Carbonate Hydrate, and Pink Highlighter Fluid). Each key chain was fumed with the assigned test substance added to the superglue during the cyanoacrylate latent print fuming process. The key chains then were examined for fingerprint points (dots, hooks, ridge endings, islands, and bifurcations), visible clarity, black light clarity and overall sample quality under a black light with magnifying glass in a black box and with a magnifying glass alone. A sample latent print key chain was fumed using the regular cyanoacrylate fuming process to compare to also. All results were charted on observation sheets and on a spreadsheet for a graph. The sample quality score for the three tests in each group were then averaged for an overall sample quality score.

Results
The tests proved my hypothesis false. Cobalt Carbonate Hydrate did enhance the visibility of the latent print the most, but none of the prints appeared in color, therefore I have not created a "One Step" fuming process. Pink Highlighter, which I tested last year, was a very close second.

Conclusions/Discussion
My conclusion is that adding Cobalt Carbonate Hydrate did not create a "One Step" fuming process. I am still determined to find a substance that will make a latent print show up in color during Cyanoacrylate Fuming. I believe with further research on substances and testing, a "One Step" Cyanoacrylate Fuming process will be possible. I am very interested in forensic science and hope to work with a latent print lab on my next science fair project.

Summary Statement
My project is an attempt at creating a "One Step" Cyanoacrylate Fuming process by adding a substance during fuming to make the latent print appear in color, therefore eliminating the process of adding color to a latent print after fuming.

Help Received
Jeremy & Cari Smith (parents) for watching me fume and providing supplies. My grandparents (all of you) for helping with supplies and equipment. Lloyd Thomas, Seattle Latent Prints for your interest and interview. Craig Cooper, Pasadena Police for interviews. Ann Punter, Cognet for interview.