

# Detection of Secret Writing by using Various Methods - A Review

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## ABSTRACT

In recent times the secret writing is obtained as key evidence from crime scenes. This plays vital role in solving the crime. Secret writing detection by various methods is easy methods for visualization the invisible messages. numerous techniques have been documented in the literature for revealing secret messages by using various methods. In the present review paper, physical and chemical methods are used for secret writing detection. Secret inks like biological fluids, vegetable juices, fruits juices etc. are use. secret writing using different biological, vegetable, and chemical fluids involves using substances like lemon juice, onion juice, or invisible ink. Heat treatment can reveal hidden messages written with certain substances, while iodine fuming is effective for detecting invisible inks, causing them to become visible.

Keywords : Invisible Inks, Secret Writing, Physical Methods, Chemical Methods, Biological Fluids, Evidence, Chemical Fluids.

## I. INTRODUCTION

Secret writing, also known invisible ink, it is form of writing that are hidden to the naked eye and also can only be revealed under specific heat lighting, and chemical treatment. One common method creating secret messages, often familiar to the schoolchildren through various projects and activities, is a use of invisible ink. This approach typically involves use of the acidic substance, with lemon juice being popular choice due to its ability to dry and not leaving visible traces. Instead of traditional ink, this acidic juice is applied to the paper using fine stylus, such as

toothpick. Once the juice dries, the acid lingers on the paper, causing it to weaken. The invisible notes become visible when heat can apply to the paper. Other liquids for making invisible ink include acidic substances like white wine, vinegar wine, milk and apple juice. Anciently prisoners of war have resorted to using their own acidic fluids, such as sweat, saliva, or even urine, tears which, despite the evaporation of water in these bodily fluids, still contain acids. A variation of this technique involves using a mixture of baking soda and water as the invisible ink (gardner, 1984). After it This paper a new type of secret paper makes from network structure callouses fibers and

ultralong hydroxyapatite Nanowires has been developed. On secret paper a white vinegar used as security ink and fire use as a description key the secret paper written by secret ink (white vinegar) are completely invisible in natural light it can be decrypted and seen clearly and read when fire exposure on paper the time to fire paper is less than 10 seconds the various paints filled with white vinegar is used on secret paper, grape juice concentrate is applied with a paintbrush (fei-feichen, 2019) The acid in the grape juice reacts with the baking soda, and then a base or alkali in chemical terms, and revealing the hidden message. Hidden messages made with bodily fluids can be visible using ultraviolet light, as the unique absorption and reflection properties of UV rays aid in deciphering concealed content. Additionally, certain substances exhibit fluorescence when exposed to UV light, and messages written with liquids like lime, orange or onion juice can be unveiled by subjecting the document to heat. At the mid-20th century secret writing is employed to discreetly transmit notes to the third party in an invisible format. Secret writing, also known as cryptography, has a long and fascinating history. Throughout the ages, individuals and organizations have used various methods to encode and decode messages, keeping sensitive information confidential and out of the wrong hands. In this article we'll delve into secret writing, exploring its origins, evolution, and modern applications. The art of secret writing can be traced thousands of years. Some of the earliest examples date to ancient Egypt, where hieroglyphs were often used to encode important information. The Greeks, too, developed methods for secret communication, including the use of scytales – rods wrapped with strips of parchment, which revealed messages when unwound. Cryptography truly came into its own during the Renaissance. Prominent polymaths such as Leon Battista Alberti and Blaise de Vigenère developed ciphers and encryption techniques. The most famous historical cipher is Caesar cipher, attributed to Julius Caesar. It involves shifting every letter in plaintext

stable number of places down or up the alphabet. This method is known as a substitution cipher. The field of secret writing took a significant turn during the World Wars. Both World War I and World War II saw the extensive use of encrypted messages.

## II. METHODS AND MATERIAL

Detection of secret writing by using various fluids has gained a growing interest from the research community in recent years. Secret writings found on a crime scene. Secret writing is considered as key evidence

### Examination of invisible writing liquid Composition and their decoders

Throughout history of ancient, invisible ink held an important role in cryptography, even though technological advancements have largely replaced its use. The intriguing history of invisible ink continues to captivate researchers today as they seek readily available substances for encoding messages and their corresponding decoders. This art of covert communication was likely conceived to render any hidden text unreadable to anyone until they applied specific decoding methods to reveal the legible message (harneprajakta, 2018)

### An evaluation of some commonly used Methods for visualization of secret writing

In this paper different types of invisible ink are used such as fruit juices which include Apple juice, lemon juice, grape juice, chemical fruits which include detergent, sugar solution, vinegar are used. Biological fruits include milk, sweet this sample kept at normal temperature and analysed at regular intervals of 5 days for one month using different physical and chemical methods in fruit juices by using physical method, visibility decreases with time. Grapes used show stable visibility in UV light. Visibility of fruit juices in chemical method in detergent decreases by time with it and in UV light it shows little

irregulate solutions and vinegar by heat visibility turns brown in colour when heat in both physical and chemical method good result are seen up to one month (deeptiandharmule, 2013)

### **An examination of some commonly utilized Techniques for perception of secret writing**

this paper suggest that secret writing can be detected by physical and chemical method Heat is the best physical method to detect secret writing because it takes less time: Not all writings are visible in UV light so it takes that time Among the chemical method, iodine fume is the best method as it does not damage the document much. Both these methods give good results for one month (harneprajakta, 2018)

### **Simple techniques to reveal invisible ink in Forensic science**

In this paper for vegetable fruits to fruit uses and four biological fluids are taken vegetable fluid contain onion garlic lemon Ginger are taken by logical fluid contain milk saliva sweat blood are taken fruit juice contain apple orange are taken and the 10 sample deciphered through physical and hitting method in biological fluid sample include milk sweat saliva blood are heated the invisible message seen in brown colour in UV lamp biological fluid visible in blue colour fluorescence in fruit juices sample including Apple juice orange juice or heated the invisible message seen in brown colour in UV lamp fruit juices visible in blue colour fluorescence in vegetable juices sample including onion garlic ginger lemon are heated the invisible message seen in brown colour and vegetable fluids in UV lamp visible in blue color fluorescence heating method is best method for detection of secret writing (upadhyay, 2017)

### **Secret paper with vinegar as an invisible security ink and fire ads description key of information protection**

This paper new type of secret paper makes from network structure cellulose fibers and ultralong hydroxyapatite Nanowires a has been developed. On secret paper a white vinegar used as invisible fire and

security ink use as a description key secret paper written by secret ink (white vinegar) are completely invisible in natural light it can decrypted and sin clearly and read when fire exposure on paper the time to fire paper is less than 10 seconds the various paints loaded with white vinegar is used on secret paper. (fei- feichen, 2019)

## **III. RESULTS AND DISCUSSION**

In this review paper various methods are used in detection of secret writing messages notes etc the ecofriendly easily available less expensive methods are mainly studied in this review the secret writing detection method is an unrivated technique in the field of forensic science for revealing secretary writing on wide range this review paper will help to gain a better understanding of secret writing detection by various methods.

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